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RELATIONSHIP BETWEEN SERVICE INTENSITY, CARE COORDINATION, AND  
CHILD OUTCOMES: EVIDENCE FROM THREE SYSTEMS OF CARE SITES

A Dissertation Presented

by

Kristen Michelle Leverentz- Brady

to

The Faculty of the Graduate College

of


The University of Vermont

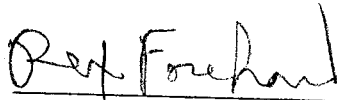
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for the Degree of Doctor of Philosophy  
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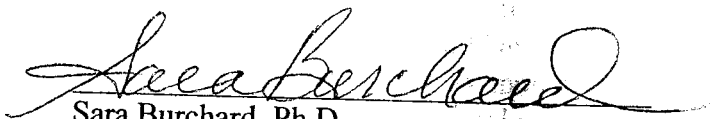
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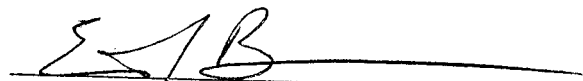
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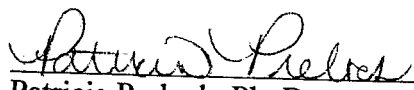
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## **ABSTRACT**

The current study examines the relationship between service utilization and child outcomes, and the role fidelity to the principles of the wraparound care coordination process plays in mediating that relationship. One hundred and twenty-one participants at three separate Children's Mental Health Services (CMHS)-funded Systems of Care national evaluation sites in three states were administered the Wraparound Fidelity Index (WFI), designed to measure adherence to the principles of wraparound; child outcomes measures, including the Child Behavior Checklist (CBCL) and the Child and Adolescent Functional Assessment Scale (CAFAS); and the Multi-Sector Service Contact Questionnaire (MSSC), designed to assess services received. Data were analyzed using hierarchical multiple regression and linear mixed models in order to examine the mediational role fidelity plays at two levels, children and wraparound facilitators, and at three different time points, baseline, six-month follow-up, and twelve-month follow-up. No statistically significant relationships were found between wraparound fidelity and child outcomes at six-month follow-up. Also, at six-month follow-up, the level of services the child and family received significantly predicted child outcomes related to externalizing symptoms but not to internalizing symptoms or functional impairment; however, this relationship was not mediated by fidelity to the wraparound process. From baseline to six-month follow-up and twelve-month follow-up, no statistically significant relationships were found between wraparound fidelity and child outcomes across wraparound facilitators. Also, no statistically significant relationships were found between the level of services the child and family received and child outcomes. A mediation model from baseline to six-month follow-up and twelve-month follow-up was not viable due to the null findings. Exploratory analyses were conducted. Implications of these findings and directions for future studies are discussed.

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## Introduction

The current study is a dissemination research study and examines fidelity to an innovative treatment, the wraparound process for children and families, and the role fidelity to treatment plays in mediating the relationship between service utilization and child outcomes. The paper begins with a discussion of children's mental health research focused on the dynamics of implementing innovative treatments in usual care settings, and one specific research construct, that of the role of treatment fidelity as a key predictor of outcomes. This discussion then focuses on types of mental health research and the so-called "science to service gap," whereby services found to be effective in well-controlled research trials do not achieve positive results in community or usual care conditions. This discussion concludes with a review of the approach to serving children and families called the wraparound process. The wraparound process is a proposed mechanism to overcoming the "science to service gap" because of its focus on full engagement of families and the tailoring of services to meet their specific needs. Key aspects of the wraparound approach are the focus of the current study. Specifically, this study examined the relationship between service utilization and child outcomes, and tested whether fidelity to the principles of the wraparound care coordination process mediated that relationship.

### *Children's Mental Health*

There is a public health crisis involving children with emotional and behavioral problems (U.S. Department of Health and Human Services, 2000). An estimated 4.5 to

6.3 million children in the United States have a serious emotional disturbance (SED), meaning they meet diagnostic criteria for a psychiatric disorder and also experience serious impairment in their functioning (Friedman, Katz-Leavy, Manderscheid, & Sondheimer, 1996; U.S. Public Health Service, 2001). These children do not always receive all of the services that they need, often because of a fragmented service delivery system. Although it is estimated that 20% of all children are in need of mental health services (Burns & Santos, 1995; Shaffer et al., 1996), only 10% of those in need actually receive these services (Burns & Santos, 1995). Without the necessary services, these children are at heightened risk for impairments in functioning throughout their lives, including dropping out of school, drug and alcohol abuse, violent acts, and possibly serving jail time as adults (Burns, 2002; Walker & Sprague, 1999).

Although it is obvious that many children with emotional and behavioral problems are in need of mental health services and do not always receive services, the picture is complicated further by how mental health and other important services are implemented. For example, mental health services have traditionally been offered as primarily office-based outpatient therapy or as treatment occurring in more restrictive residential placements (Duchnowski, Kutash, & Friedman, 2002). Mental health services are not usually well coordinated, responsive to specific needs of families, or available in the least restrictive placement settings possible. Because of this lack of coordination and responsiveness, many children have been served through restrictive residential or psychiatric placements, which typically do not have well-developed research bases on effectiveness (Burns, Hoagwood, & Maultsby, 1998). There has been an increasing push

in the mental health field to make services available in and linked to the community in which the child resides (Stroul & Friedman, 1986). The child's current community is usually the context in which the onset of the child's emotional and behavioral problems first occurred and where the emotional and behavior problems are being maintained. Such community-based care that involves the child's family and other natural supports is vital, if well-accepted principles of the systems of care framework are to be applied (Stroul & Friedman, 1986). A community-based approach is particularly important in order to deliver services that are consistent with ecological (e.g. Bronfenbrenner, 1979) and social learning theories (e.g. Bandura, 1977), which argue that such an approach is essential to increase the likelihood that treatment gains will generalize to the settings in which the child will ultimately live.

Although linkage of services with the community and provision of them in the least restrictive setting possible can be accomplished through greater availability and coordination of services, studies indicate that service coordination alone is inadequate for improvement of clinical outcomes (Bickman, 1996; 2000). Due in part to these findings, the focus of research on service delivery has increasingly moved from including only measures of the fidelity of service coordination within a service system to also including measures of the intensity and type of services delivered, their potential for impact, and the nature of their implementation in community settings (Hoagwood, Burns, Kiser, Ringelsen, & Schoenwald, 2001).



### *Treatment Fidelity*

One approach to examining intensity and type of service delivery involves research on the strength and integrity of treatments (Sechrest, West, Phillips, Redner, & Yeaton, 1979). One aspect of the strength of treatments is the intensity of the services, in that the strength of the treatment refers to how strong the treatment approach is, i.e., is the treatment approach sufficiently powerful to address the problem it is intended to address? Treatment integrity or fidelity, on the other hand, refers to whether the treatment is implemented as it is intended. For example, in psychotherapy research, assessment of treatment fidelity is important to determine if therapists are competently and adequately performing the treatment (Waltz, Addis, Koerner, & Jacobson, 1993). It is now recognized that to advance understanding of how treatments work, research on service delivery needs increasing focus on these two aspects of treatment, strength and fidelity, because they have often been ignored or inadequately assessed in past research in community settings.

The importance of treatment fidelity to achieving effective services – and as a research variable – has gained prominence in recent years (Prinz & Miller, 1994; Calsyn, 2000). Measurement of fidelity can occur at the individual provider level, as well as the program and system levels. At the individual provider level, the critical fidelity question may be posed as: Is the individual provider implementing the service as it is intended? Additionally, fidelity is particularly important when evaluating outcomes of a service because (1) it aids the implementation of practice, and (2) interpretation of outcomes in evaluation research requires knowing whether the intervention was implemented as

intended, i.e., when implemented as intended was the treatment effective? Conversely, positive outcomes do not in and of themselves mean that the treatment is effective. Rather, evaluators must know that the treatment was implemented as intended in order to determine that the positive outcomes were a result of the stated treatment. Similarly, negative outcomes do not in and of themselves indicate that a treatment is ineffective. Rather, negative outcomes could be an indication that the treatment was not implemented as intended or that the treatment was not effective; a determination that would be highly difficult to make without some measurement of fidelity. Given increasing emphasis on outcomes and evidence-based practices in mental health services research (Hoagwood, Schoenwald, Kiser, Ringelsen, & Burns, 2001), fidelity is an important area in both implementing innovative treatments and synthesizing findings across studies as new services are tested.

There are, however, multiple challenges to assessing treatment fidelity in children's mental health research (Bruns, Burchard, Suter, & Force, in press). First, lack of treatment specification is characteristic of many treatments for youth. Second, the more complex a treatment is, the more dimensions that need to be assessed to measure fidelity of the treatment delivery. Treatment models for youth are complex and treatments are often individualized for a youth and family; because of the complexity of treatment models for youth, it is important to assess treatment fidelity of the therapist, as well as to measure fidelity across providers, and across program and system level characteristics (organizational level factors). Third, treatment fidelity may be more difficult to assess in

treatments that are politically or economically controversial. These multiple challenges necessitate greater diligence when assessing the treatment fidelity of a given service.

An example of the complexity of measuring fidelity can be found in a study examining fidelity, organizational factors, and child outcomes in multisystemic therapy (MST; Schoenwald, Sheidow, Letourneau, & Liao, 2003). This study found that fidelity and organizational factors all had direct effects on child outcomes. However, when the authors tested a mediation model, they did not find that fidelity mediated the relationship between organizational factors and child outcomes. The organizational factors' effects on child outcomes were not accounted for by fidelity but rather made a unique contribution to the child outcomes.

The current study examines the strength and fidelity of services delivered via the wraparound process, one way to provide well-coordinated services that are responsive to the needs of families and that are provided in the least restrictive placement setting possible. Specifically, treatment fidelity for wraparound facilitators, that is the level of adherence to the wraparound process, is examined because of the wraparound processes' reliance on service coordination.

With respect to the wraparound process, previous studies by our research team indicated that program and system level characteristics of sites, fidelity across individual clients, and outcomes are interrelated (Bruns, Suter, Burchard, & Leverentz-Brady, 2003). However, in wraparound research to date, no study has considered the variance accounted for by the individual providers' adherence to wraparound principles. The individual provider level is a necessary level to examine because it is likely that much of

the variance in fidelity across individual children and families receiving an intervention is “nested” at the individual provider level (in the case of wraparound providers, the individual provider is the wraparound facilitator).

Such variation at the wraparound facilitator level could be a consequence of differences in individual wraparound facilitators’ theoretical orientation, amount of experience, or amount of specific training. For example, Rast, Peterson, Earnest, and Mears (2004) found that differential amounts and intensities of training yielded significant differences in facilitators’ wraparound fidelity scores. However, the amount of variance in outcomes accounted for at the wraparound facilitator level versus, for example, organizational supports or individual children and families, is unknown.

The core principles and goals of the wraparound process include a strong focus on service coordination and reliance on individual wraparound facilitators to implement a complex service delivery process. Consequently, it is especially important to look at implementation and fidelity at the individual provider level, and at how child outcomes are nested within that level. Studies examining the individual provider level provide a foundation on which to build in looking at supports at the broader program and system levels. This approach is consistent with the Community Intervention Development (CID) model of Burns and Hoagwood (2002), which notes that studies such as the current one focusing on dynamics of implementation of an innovative treatment model should be conducted in parallel with more rigorously controlled effectiveness studies. These effectiveness studies are currently underway for wraparound. When such parallel research occurs, results of effectiveness studies can be better applied in community

settings, because considerations about community-based implementation (such as the amount of variance in outcomes wraparound facilitators will account for) will have been investigated.

### *Types of Research in Mental Health*

Placing the present study in a broader context, research on implementation and outcomes of services can be divided into two types. Whereas efficacy research attempts to measure the outcomes of an intervention or treatment under ideal conditions, effectiveness research attempts to measure the outcomes of treatments or interventions when implemented in community settings, such as schools or clinics. In other words, when conducting effectiveness research, the focus is on measuring the implementation of services by front-line clinicians and the effects of services on their clients, usually in the absence of tight experimental control (Donenberg, Lyons, & Howard, 1999). These two types of mental health research have at times been identified as being separate entities; however, rather than being discrete categories, they are two important parts of the continuum of outcomes research.

The differences between efficacy and effectiveness studies also parallel the increasingly discussed “science to service” gap in mental health services (National Institute of Mental Health, 1999). The science to service (or research to practice) gap in mental health services notes the differences between what is known from research studies and what is typically practiced in community settings. Differences in effects found in well-controlled settings as opposed to effects found in community-based settings have led to calls for clarification of factors that must be accounted for when disseminating

treatments into public settings, so that what is known from research studies can be more effectively translated to community settings (Hoagwood et al., 2001). In addition, the illumination of the science to service gap has led to calls for modification of research methods that might generate findings that are more relevant to community researchers (Weisz, 2000). Included among the specific recommendations for researchers is an increased emphasis on dissemination research (Rosenheck, 2001). Often described as more descriptive than quantitative, dissemination research frequently focuses on aspects of organizational and system conditions that may enhance or impede the adoption of innovative treatments or practices, and thus their potential for impact (Rogers, 2003).

#### *Organizational and System Level Characteristics*

There are a number of different organizational and system level characteristics identified as critical to implementation of research-based treatments. Schoenwald and Hoagwood (2001) identify six different characteristics or dimensions that are important in the course of implementing an innovative service (and thus, in translating a service from research into practice). These are characteristics of the (1) intervention, (2) practitioner, (3) client, (4) service delivery, (5) organization, and (6) service system. It is critical that outcome studies conducted in community settings consider such variables in order to interpret the findings and the relative contributions of each variable. The intricacies involved in the relationships among these six variables have been demonstrated in research on the transportability of MST (Henggeler, Melton, Brondino, Scherer, & Hanley, 1997; Huey, Henggeler, Brondino, & Pickrel, 2000). Whereas studies that concurrently consider all six of these variable types would be useful in investigating

outcomes related to the wraparound process, the current study focused on the first four characteristics as a necessary first step in the investigation of outcomes related to the wraparound process. As noted above, to date, no study has considered the variance accounted for by the individual providers' adherence to wraparound principles, and doing so provides a first step to be built upon by examining the broader program and system level variables. Currently, a parallel strain of research is being conducted focusing on the relationship of system and program variables to outcomes (Bruns, Suter, & Leverentz-Brady, 2006; Walker, Koroloff, & Schutte, 2003).

### *The Wraparound Process*

Wraparound is an approach to serving children and families that began in the late 1980s as an alternative to treatment that was uncoordinated, relied solely on professional services, and that often took children out of the community and away from their families. The National Institute of Mental Health (NIMH) began the Child and Adolescent Service System Program (CASSP) in 1982 to aid states in developing comprehensive and community-based systems of care to reduce the service gap for children with SED. In 1992, CASSP became part of the Child, Adolescent, and Family Branch of the Center for Mental Health Services (CMHS) in the Substance Abuse and Mental Health Services Administration (SAMHSA) and began giving federal grants to individual states to aid in building systems of care within the communities. The basic goal of CASSP, to build systems of care within communities, goes hand-in-hand with the core principles of the wraparound process (Burchard & Clarke, 1990). The wraparound process has gained momentum within the children's mental health field because it is purported to be a more

effective means of serving children with serious emotional problems than traditional service delivery (Burchard, Bruns, & Burchard, 2002). In addition, through wraparound, children with serious emotional problems are served in the community and potentially at a lower cost than more restrictive service options such as residential treatment or psychiatric hospitalization. Wraparound has been defined as “a definable planning process that results in a unique set of community services and natural supports that are individualized for a child and family to achieve a positive set of outcomes” (Burns & Goldman, 1999, p. xiii). Wraparound is not a service per se, but is a process through which a provider organization works to engage families in an individualized planning process that fits services and supports to the needs of the child and family, and then implements that plan over time.

#### Wraparound Principles.

Like MST (Henggeler, Schoenwald, Rowland, & Cunningham, 2002), the wraparound process is utilized with children and families in an individualized and flexible manner while adhering to a value-base of core principles. Ten principles originally described in 1999 and recently refined by the National Wraparound Initiative, have been identified as being crucial to the implementation of wraparound (Walker et al., 2004). These include:

1. Family Voice and Choice,
2. Team-Based,
3. Natural Supports,
4. Collaboration,



5. Community-Based,
6. Culturally Competent,
7. Individualized,
8. Strengths-Based,
9. Persistence, and
10. Outcome-Based.

Family Voice and Choice, in the wraparound process, means that families are actively involved with every step of the process. Their perspectives are purposefully sought out and given priority. The team (consisting of family, youth, resource facilitator, professionals, and non-professionals) seeks to provide options to the family so that the plan of care adequately reflects the family's preferences.

Team-Based indicates that there should be a team driving service delivery. This team should consist of the caregivers, the youth if he or she is old enough and able to be an active participant, and professionals and non-professionals who are involved with the family. Professionals are those people who work for agencies such as mental health, social services, juvenile justice, and education that are involved with the family in a professional "helping" role. Non-professionals are those individuals who are in the family's community. They may be paid, such as a mentor, or un-paid, such as a religious clergy or friends of the family. All the members of the team should be committed to the family.

Natural Supports indicates that the team should be comprised of people from the family's support networks, both community and interpersonal. The professional services

should be part of the picture with community supports and non-professionals making up the other part of the picture. The plan should make use of these natural supports.

Collaboration indicates that agency providers and non-agency supports should work together with one another in providing care to the child and family. Each provider and support should not be working on its own individual sets of goals without being integrated with the other providers and supports. There should be one set of team goals that everyone involved with the child and family are working on.

Community-Based indicates that both professional services and non-professional supports should be based in the family's community. The child should receive services in the community and not need to travel an inconvenient distance to receive the necessary services. The child should also be maintained in the least restrictive community setting possible, meaning out of community placements and psychiatric placements should be minimized as much as is feasible considering the child's needs. The goals should work to integrate the child and family into their community as safely as possible.

Culturally Competent indicates that all professionals and non-professionals working with the family should be knowledgeable of and respectful of the family's own cultural beliefs and traditions. They should also work to integrate the family's cultural beliefs and traditions with the professional services and nonprofessional supports being offered.

Individualized indicates that, in the wraparound process, both professional services and non-professional supports should focus on the child and family's individual needs. The family should receive the services that they need and that are individualized to

their specific situation. The plan should consist of services and supports tailored for each individual child and family.

Strengths-Based indicates that the team should actively seek out the family and child's strengths. The plan of care should acknowledge and utilize those strengths. Additionally, the team should ensure that the goals in the plan of care work to enhance the child and family's strengths.

Persistence indicates that the professional services and non-professional supports offered should be provided unconditionally to the child and family. The youth and family team should stick with the child and family as long as they are needed, until the team decides that a formal team is no longer needed. The child and family should not feel that, were the child to experience a crisis, the youth and family team would not be available to him or her.

Finally, Outcome-Based indicates that all professional services and non-professional supports included in the plan of care should be measurable. Services should be monitored to ensure that they are the appropriate goals for the child and family at that time. If those goals are achieved or no longer necessary for the child and family at that time, then those goals should be changed to more appropriate ones.

#### Wraparound Service Model.

Historically, there has been debate over the specific activities of the wraparound process, and about whether it can be operationalized or should remain a value-driven process (Walker & Bruns, 2006). In recent years, however, there has been movement toward overcoming the "fidelity problem" in wraparound through better definition of

standards and specification of a replicable model to be implemented by communities and used in effectiveness trials. This specification began with creation of measures such as the Wraparound Observation Form (WOF; Epstein et al., 1998) and the Wraparound Fidelity Index (WFI; Suter et al., 2003; Bruns et al., 2004).

More recently, an intensive qualitative research project involving compilation of models from multiple sources and a national consensus-building process using *Decision Delphi* (Adler & Ziglio, 1996) has resulted in a wraparound process model with full description of the activities commonly found in a high-fidelity wraparound process. This project found good consensus among experts that the wraparound process includes a number of specific activities that occur in four “phases” of wraparound – Engagement, Planning, Implementation, and Transition. In addition, these activities are well-understood to be undertaken collectively by a youth, his or her family, one or more persons serving as wraparound facilitators, and a group of team members that ideally consist of both formal providers and agency representatives and informal support persons. This model is presented in Appendix 1.

#### Wraparound Research.

Several studies have examined child outcomes and the wraparound process, including qualitative case studies (Burchard, Burchard, Sewell, & VanDenBerg, 1993; Cumblad, 1996), pre-test post-test with no comparison group (Anderson, Kooreman, Mohr, Wright, & Russell, 2002; Bartley, 1999; Bruns, Burchard, & Yoe, 1995; Clarke, Schaefer, Burchard, & Welkowitz, 1992; Eber, Osuch, & Redditt, 1996; Eber, Osuch, & Rolf, 1996; Hyde, Woodworth, Jordan, & Burchard, 1995; Illback, Neill, Call, & Andis,

1993; Kamradt, Kostan, & Pina, 1998; Kamradt & Meyers, 1999; Kutash, Duchnowski, Sumi, Rudo, & Harris, 2002; Lyman & de Toledo, 2002; Robbins & Collins, 2003; Seybold, 2002; Toffalo, 2000; Yoe, Santarcangelo, Atkins, & Burchard, 1996), quasi-experimental studies (Bickman, Smith, Lambert, & Andrade, 2003; Hyde, Burchard, & Woodworth, 1996; Reay, Garbin, & Scalora, 2003; Resendez, 2002), and experimental studies (Clark et al., 1998; Evans, Armstrong, Kuppinger, Huz, & McNulty, 1998; Myarrrd, Crawford, Jackson, & Alessi, 2000). For a comprehensive review of these studies, see Suter (2003). Many of these studies found some improvement in child outcomes such as functional status [(i.e. the Child and Adolescent Functional Assessment Scale, CAFAS, Hodges & Wong, 1996) Anderson et al., 2002; Eber et al, 1996; Evans et al., 1998; Kamradt & Meyers, 1999; Lyman & de Toledo, 2002; Myarrrd, Crawford, Jackson, & Alessi, 2000; Robbins & Collins, 2003; Reay et al., 2003, Resendez, 2002] and psychological symptoms and behaviors [(i.e. Child Behavior Checklist, CBCL, Achenbach, 1991) Bartley, 1999; Bickman et al., 2003; Bruns et al., 1995; Clark et al., 1998; Clarke et al., 1992; Eber et al., 1996; Illback et al., 1998; Kamradt & Meyers, 1999; Robbins & Collins, 2003; Seybold, 2002; Toffalo, 2000]. Others found no improvements in functional status (Kutash et al., 2002) or psychological symptoms and behaviors (Kutash et al., 2002; Evans et al., 1998). However, these two latter studies did not have adequate statistical power to detect small effects and therefore may not have been able to detect statistically significant results.

The three quasi-experimental studies that looked at either functional status or psychological symptoms and behaviors (Bickman et al., 2003; Reay et al., 2003;

Resendez, 2002) did not find significant differences between the wraparound groups and the comparison groups. Although each of these three studies did have adequate power, there are some important limitations to these studies that may have contributed to the lack of significant differences between groups. Primary among these limitations was the fact that none of the studies employed full and complete fidelity measurements, thus rendering it unclear whether wraparound was delivered as intended.

For example, Bickman and colleagues (2003) compared a wraparound group to a traditional services group. This study did not have a measurement of wraparound fidelity and therefore it is unknown whether the site adhered to the wraparound process.

Resendez (2002) compared a wraparound group to a traditional services group. However, this study assessed only one element of the wraparound process, Flexible Resources and Funding, and therefore did not adequately assess the wraparound process.

Finally, Reay and colleagues (2003) compared a wraparound group to an MST group. The finding in this study of a lack of group differences is encouraging because MST is as an empirically supported treatment for youths with conduct problems (Brestan & Eyberg, 1998). However, because of the lack of a fidelity measurement for the wraparound process, it is not possible to determine how fully the site adhered to the wraparound process.

The lack of a fidelity measure that assesses the program's adherence to the wraparound process, and subsequently the inability to ascertain to what extent the principles of wraparound were fully adhered to, is a common limitation in the literature regarding the wraparound process. Of the outcomes studies listed above, only three

(Bickman et al., 2003; Kutash et al., 2002; Toffalo, 2000) included some measure of fidelity, though not necessarily to the full wraparound process.

Having a measure of fidelity is critical to interpreting outcomes in part because ensuring high fidelity to the core principles of wraparound has been found to be important in achieving positive outcomes (Bruns, Rast, Walker, Peterson, & Bosworth, 2006; Bruns, Suter, Force, & Burchard, 2005). Bruns and colleagues (Bruns et al., 2006) found that there was a predictive relationship between wraparound facilitator-level fidelity and mental health outcomes. Bruns and colleagues (Bruns et al., 2005) also found a predictive relationship between adherence to the wraparound process and outcomes related to the child's functioning. Additional exploratory research has supported this finding of a predictive relationship between adherence to the wraparound process and child and family outcomes (Hagan, Noble, Schick, & Nolan, 2003; Rast et al., 2003). While these findings are encouraging, they need to be replicated across larger samples.

#### Cost-Effectiveness of the Wraparound Approach.

An important area in the evaluation of the wraparound process is whether it is providing better services at a lower cost that results in more positive outcomes for children and families. Service providers want to know that the services they are providing to children and families are helping them achieve outcomes that are more positive. Moreover, in order to have the service delivery system financially supported on a system level there needs to be evidence that it is a more cost effective alternative than traditional service delivery. This is not to say that economics are the only basis of evaluation nor is cost effectiveness equivalent to better services. Rather, if the same or better outcomes can

be achieved at a lower cost, more services can be provided to children to aid in lessening the gap in services for children with emotional and behavioral problems.

Studies in Vermont (Bruns et al., 1995), Maryland (Hyde et al., 1995), Wisconsin (Kamradt, 2000), and New York (Johnson, 1998) showed that the cost of wraparound services was less expensive than the cost of traditional service delivery and that the cost could decrease over time. In Vermont, during the first month of wraparound service delivery, the average cost to treat one child was \$3,859. The average monthly cost after one year of wraparound had lowered to \$3,556 (Bruns et al., 1995). In Baltimore, Maryland, the rate per day for a child in out-of-state placement was \$269 while the rate per day for a child treated by wraparound services was \$216 (Hyde et al., 1995). The cost of treating one child in a residential treatment center per month was \$5,000 or more whereas the cost of treating one child with wraparound services per month was \$3,300 (Kamradt, 2000). A study of wraparound in New York found that the cost for treating a child in therapeutic foster care for one year was approximately \$51,965 whereas the cost for treating a child with wraparound services for one year was estimated at \$18,000. Therapeutic foster care is foster care with the added component of providing treatment in the home by extensively trained foster parents. Therapeutic foster care can attend to the service needs and daily living needs of children who may be too high-risk to be maintained in a regular foster care home environment but who require less restrictive care than a residential treatment center or inpatient hospital (Stroul & Friedman, 1996). The services represented in the wraparound cost include the full range of services, including community placement and hospital admissions.



Additionally, a review of studies on system of care communities (Rosenblatt, 1998) found that 17 out of the 18 studies reviewed showed either reduction in the cost of treatment or reductions in the use of more restrictive, and expensive, treatments such as inpatient hospitalization and residential treatment center stays. The one study that did not show this cost-effectiveness was the Fort Bragg study (Bickman et al., 1995).

Examination of the costs of service coordination in the Fort Bragg demonstration project (Bickman et al., 1995) and in the demonstration project in Stark County, Ohio (Bickman, Summerfelt, & Noser, 1997) did not show evidence for cost-effectiveness and instead found higher costs per child (Foster, Summerfelt, & Saunders, 1996). However, for the Fort Bragg study (Bickman et al., 1995; Bickman, Lambert, Andrade, & Penaloza, 2000), there were indications that there was not high fidelity to the treatment program.

A study looking more specifically at a wraparound group compared to a traditional services comparison group (Bickman et al., 2003) found that an average of \$12,912 was spent per child on the children in the wraparound group compared to an average of \$7,469 per child in the traditional services comparison group. This difference was statistically significant between groups with the cost for the traditional services comparison group 42% less than the costs for the wraparound group. One limitation to this finding is that the treatment given to the wraparound group in this study did not adhere to all the tenets of the wraparound process. There were a number of the wraparound principles that were either not implemented or implementation was not assessed. This study, therefore, did not have high fidelity to the wraparound process, which must be taken into account when evaluating the findings.

There are several reasons why services provided via the wraparound process may be more cost effective. The emphasis on preventing out-of-home placements leads to less money spent for costly residential services. The emphasis on informal resources allows for increased support from various community resources that would lead to a decreased need for more costly formal support services. The emphasis on community involvement sets up a community network around the child and family that would allow for the child to function in that community better as an adult (Burns, Schoenwald, Burchard, Faw, & Santos, 2000). However, it may be that the emphasis on informal resources initially leads to higher costs, especially in a system that has not traditionally used informal resources.

#### The Wraparound Research Agenda.

Dissemination research, including outcome studies, on wraparound is emerging as a high priority because implementing high-fidelity wraparound for individual families requires attention to multiple levels of activity. Previous research has shown that wraparound is a complex process and that achieving adherence to the principles requires multiple supports at both the provider and system levels (Walker et al., 2003); greater adherence to the wraparound process is associated with positive outcomes (Bruns et al., 2003; Bruns et al., 2006; Bruns et al., 2005; Hagan et al., 2003; Rast et al., 2003).). These studies report critical findings for the research base of the wraparound process because they emphasize both the complexity of wraparound and the supports needed to utilize the wraparound process. Moreover, findings from these studies emphasize the need to assess the level of adherence to the wraparound process in interpreting outcomes.

Although some find wraparound to have a promising empirical research base (Burns, Hoagwood, & Mrazek, 1999; National Advisory Mental Health Council, 2001; New Freedom Commission on Mental Health, 2003), others find the evidence base for wraparound to be inadequate to recommend its use (Bickman et al., 2003). Nonetheless, wraparound is estimated to be used with over 200,000 youth annually (Faw, 1999) and it is employed in the majority of federally-funded systems of care communities as a means to administer care coordination to families with children with the most intensive needs in a manner consistent with systems of care principles (Stroul, 2002; Walrath, 2001). Thus, research on both wraparound effectiveness and on its dissemination is critical at this stage.

As discussed previously, development of the wraparound research base requires outcome studies of sites that fully adhere to the wraparound process, as well as studies outlining how adherence to the wraparound process affects outcomes. The interpretation of the existing body of research is that program and system level characteristics are critical to fidelity, which in turn drives child and family outcomes. However, to date, wraparound fidelity has been considered only at the program level (in studies attempting to determine the effects of program and system conditions on fidelity) and at the child and family level (in studies of the effects of fidelity on child outcomes).

In order for research to be consistent with the CID model (Burns & Hoagwood, 2002), an appropriate progression demands that while controlled effectiveness research on wraparound advances, concurrent studies of the dynamics of wraparound implementation in community settings are also needed. Estimates of the variance

accounted for in fidelity and outcomes by a wraparound facilitator are one such need. Understanding this issue may be helpful in guiding the relative attention to the amount and types of training and coaching to provide facilitators as they start as wraparound facilitators, and throughout their employment. The relative contribution of facilitators to the relationship between fidelity and outcomes may also aid in the determination of allocation of resources to this issue versus other system and program considerations.

A second wraparound research need is better understanding of the relative importance of wraparound process implementation versus the availability, accessibility, and ultimately, intensity, of specific services and treatments received by families within the wraparound process. Results of systems of care research discussed previously find that system-level coordination between agencies and providers did not predict clinical outcomes (Bickman, 1996; 2000). This has shone a spotlight on the need to measure the intensity of actual services and supports received. The national evaluation of the Comprehensive Community Mental Health Services for Children and their Families program has developed such measures and applied them to examining the relationship between intensity of services and supports received and child outcomes (SAMHSA, 1999). However, no studies to date have considered the relative roles of intensity of specific treatments and supports received and the quality care coordination process that plans and manages them (wraparound) in determining outcomes.

The current study was an attempt to address both of these wraparound research needs and examined fidelity, child outcomes, and the level of services utilized by the family and whether fidelity mediated the relationship between level of services and child

outcomes. Although the level of services utilized by the family is not an organizational factor per se, the number and type of services that are available to families may differ based on organizational factors related to the individual provider agencies and the support that the providers have at both the organization and system level. For example, organizational factors such as number of staff and case load size can affect services offered to the family. The use of flexible funds may vary based on organizational and system level support.

## Statement of the Problem and Hypotheses

The wraparound process to delivering mental health services to children and families has been proposed as one mechanism for overcoming the science to service gap. The current dissemination study examined whether fidelity to treatment mediated the relationship between service utilization and child outcomes. The construct of fidelity has been found to be a key predictor of child outcomes. Thus, the primary aims for the current study were (1) to partition the variance in outcomes that is accounted for by fidelity and by a wraparound facilitator, and (2) to empirically examine the relative roles of intensity of specific services and supports received. A flow chart of the study hypotheses is displayed in Table 1.

Hypothesis 1: It was expected that level of adherence to the wraparound process by wraparound facilitators, as measured by the Wraparound Fidelity Index (WFI; Suter et al., 2003; Bruns et al., 2004) total score at six-month follow-up, would predict child outcomes as indexed by child psychological symptoms and behaviors. It was expected that as adherence to the elements of wraparound increased, negative child outcomes as indexed by child psychological symptoms and behaviors would decrease.

**Table 1: Flow Chart of Study Hypotheses**

Hyp #	Research Question	Analyses	Statistical technique	Cov.	Data Time Period	Measures Used
1	Fidelity → child outcomes	Fidelity → functional impairment	Hierarchical Linear Regression	Age Race Gender Custody status	6-month follow-up	CAFAS Five Scale Score
		Fidelity → total problems				CBCL Total Problem Score
		Fidelity → internalizing problems				CBCL Internalizing Score
		Fidelity → externalizing problems				CBCL Externalizing Score
2	Mediational model at 6 month follow-up	Services → functional impairment and mediated by fidelity	Hierarchical Linear Regression	Age Race Gender Custody status	6-month follow-up	CAFAS Five Scale Score
		Services → total problems and mediated by fidelity				CBCL Total Problem Score
		Services → internalizing problems and mediated by fidelity				CBCL Internalizing Score
		Services → externalizing problems and mediated by fidelity				CBCL Externalizing Score
3	Mediational model from baseline to six-month follow-up	Services → functional impairment and mediated by fidelity	Linear Mixed Model	Age Race Gender Custody status	Baseline 6-month follow-up	CAFAS Five Scale Score

	and twelve-month follow-up	Services → total problems and mediated by fidelity			12-month follow-up	CBCL Total Problem Score
		Services → internalizing problems and mediated by fidelity				CBCL Internalizing Score
		Services → externalizing problems and mediated by fidelity				CBCL Externalizing Score
						Overall WFI Total Score
Expl.	Individual growth curves	Functional impairment	Linear Mixed Model	None	Baseline	CAFAS Five Scale Score
		Total Problems			6-month follow-up	CBCL Total Problem Score
		Internalizing Problems			12-month follow-up	CBCL Internalizing Score
		Externalizing Problems				CBCL Externalizing Score

Hypothesis 2: It was expected that the level of services the child and family received, as measured by the Multi-Sector Service Contacts Questionnaire (MSSC) at six-month follow-up, would predict child outcomes as indexed by child psychological symptoms and behaviors. Furthermore, it was hypothesized that this relationship would be mediated by fidelity to the wraparound process, as measured by the Overall Composite WFI Total score at six-month follow-up. Specifically, it was expected that as adherence



to the elements of wraparound increased, negative child outcomes as indexed by child psychological symptoms and behaviors would decrease.

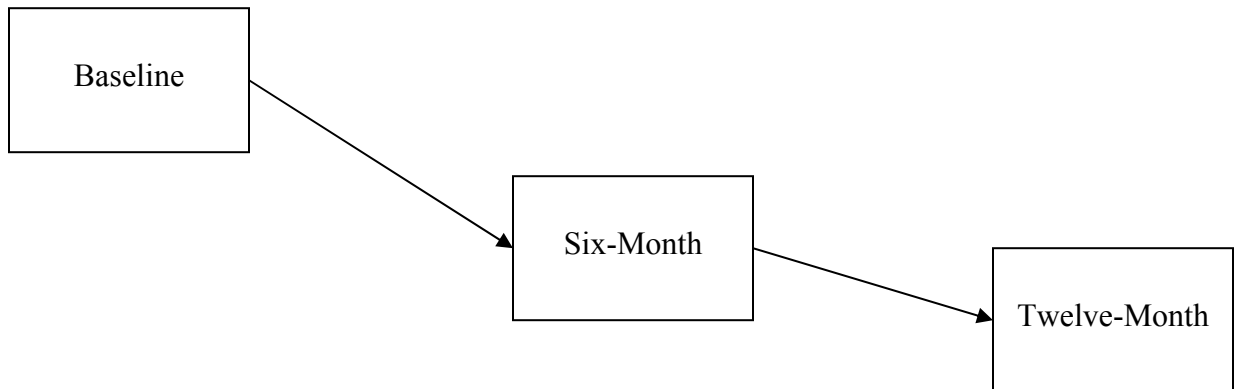
Hypothesis 3: It was expected that the level of services the child and family received, as measured by the MSSC at six-month and twelve-month follow-up, would predict child outcomes, as indexed by child psychological symptoms and behaviors. Furthermore, this relationship would be mediated by fidelity to the wraparound process, as measured by the Overall Composite WFI Total score at six-month and twelve-month follow-up. Again, as adherence to the elements of wraparound increased, negative child outcomes should have decreased.

Finally, exploratory individual growth models were examined from baseline to six-month and twelve-month follow-up for wraparound fidelity scores and child outcomes measures in order to generate hypotheses for future studies. It was expected that the same pattern in wraparound fidelity would be found from baseline to six-month and twelve-month follow-up for all participants, in that there should have been approximately a similar level of adherence to the wraparound process across treatment (see Figure 1).



**Figure 1: Longitudinal Pattern of Data for Wraparound Fidelity Across Baseline to Twelve-Month Follow-Up**

It was expected that a similar pattern in the child outcomes data would be found across all three points of measurement for all participants, in that negative child outcomes would have a larger decrease from baseline to six-month follow-up than from six-month follow-up to twelve-month follow-up (see Figure 2). It was expected that due to the inclusion criteria of the study, participants would exhibit a high level of problem behaviors and severe functional impairment at baseline, and would therefore have a greater decrease in problem behaviors and functional impairment from baseline to six-month follow-up than from six-month follow-up to twelve-month follow-up.



**Figure 2: Longitudinal Pattern of Data for Child Outcomes Across Baseline to Twelve-Month Follow-Up**

## Method

### *Participants*

Participants were 121 children, ages 5 – 18, 68% male and 47% ethnic minority at baseline, from 3 separate CMHS funded Systems of Care national evaluation sites, Indianapolis, Indiana; West Palm Beach, Florida; and West Central, Minnesota. General study inclusion criteria for youth included: (1) an Axis I Diagnostic and Statistical Manual-IV (DSM-IV) diagnosis, (2) moderate to severe functional impairment as defined by the Child and Adolescent Functional Assessment Scale (CAFAS; Hodges & Wong, 1996), (3) involvement with a mental health provider and another professional agency such as Child Welfare, Juvenile Justice, or Special Education, and (4) being either in or at risk for an out of home or out of school placement. Each site had additional specific inclusion criteria dependent on their agency requirements. All site specific criteria are listed in Appendix 2.

For each child, there was a family unit. Each family unit consisted of a wraparound facilitator (also called resource facilitator, case manager, care coordinator, and service coordinator), a caregiver, and the youth. For each family unit, caregivers were asked to complete all measures. Their respective wraparound facilitators were administered the fidelity measure only. If the youth was 11 years of age or older at the time of data collection, the youth was also asked to complete the fidelity measure. Of the 121 family units associated with participating youth, there were 34 families with all 3 respondents; 35 families with wraparound facilitator and caregiver respondents only; no families with wraparound facilitator and youth respondents only; 7 families with

caregiver and youth respondents only; 29 families with wraparound facilitator respondent only; 13 families with caregiver respondent only; and 3 families with youth respondent only.

### *Measures*

#### Child and Adolescent Functional Assessment Scale: Parent Report (CAFAS).

The CAFAS (Hodges & Wong, 1996) asks caregivers to report on the youth's poorest functioning over a specific time period, for this study, the past six months. There are 165 questions focusing on how the youth is functioning in school, at work (if applicable), at home, and in the community. Additional questions ask about the youth's behavior with others, mood and emotions, self-injurious behaviors, alcohol and drug use, and thinking and communication.

The questions are scored according to specific criteria where indicating "yes" or "no" on specific groupings of questions where items are weighted differently indicates severity. For example, the question about the child intent to harm him or her self is automatically weighted to indicate a high level of severity if answered affirmatively. The CAFAS has eight subscales: school/work, home, community, behavior towards self and others, moods/emotions, self-harmful behaviors, substance use, and thinking, and each subscale is scored according to four levels of severity. A score of 30 on each subscale indicates severe impairment and means that the youth's functioning is incapacitated or severely disrupted. A score of 20 indicates moderate impairment and means that there are occasional major disruptions of the youth's functioning or that the youth's functioning is persistently disrupted. A score of 10 indicates mild impairment and means that the youth

is experiencing significant problems. A score of 0 indicates minimal or none impairment and means that the youth's functioning is not disrupted. The CAFAS is scored starting with the highest severity level. If any items indicating severe impairment are endorsed, then a score of 30 is given. If no items indicating severe impairment are endorsed, then the rater moves to the next severity level. From these eight subscales, a five domain total is derived. The five domains are: (a) the highest score from the three subscales of school/work, home, and community, (b) the behaviors towards self and others score, (c) the highest score from the two subscales of moods/emotions and self-harmful behaviors, (d) the substance use score, and (e) the thinking score. The five domain score can be interpreted using five levels of impairment, (1) none to minimal impairment (score of 0 to 10), (2) mild impairment (score of 20 to 40), (3) moderate impairment (score of 50 to 90), (4) marked impairment (score of 100 to 130), and (5) severe impairment (score of 140 to 240; Hodges, 1994). Although no validity data are available for these levels of impairment, the measure's author recommends them as a way of putting the score into context (Hodges, 1997).

Inter-rater reliability (Hodges & Wong, 1996) and test-retest reliability (Cross & McDonald, 1995) for the CAFAS has been found to be adequate. Construct validity was examined by correlating the CAFAS with other measures of emotional and behavioral problems (e.g., the CBCL). These correlations were found to be moderate to high, depending on the measure being correlated with the CAFAS (Hodges, 1994; Bickman, 1996). Adequate concurrent validity and discriminant validity have been reported (Summerfelt, 1995; Hodges, Lambert, & Summerfelt, 1994; Hodges & Wong, 1996;

Hodges, Doucette-Gates, & Liao, 1999). The CAFAS has been used to discriminate between youths in outpatient care, alternative care, and inpatient care, with those youth in more restrictive placements receiving significantly higher CAFAS scores (Hodges & Wong, 1996). The CAFAS has also been demonstrated to reflect treatment gains (Hodges & Wong, 1996).

Internal consistency for the CAFAS for the current study using the five domain score for baseline, six-month follow-up, and twelve-month follow-up was adequate ( $\alpha = .64, .63$ , and  $.63$ , respectively). Intra-class correlations for the five domain score ranged from  $.25$  to  $.27$ .

#### Child Behavior Checklist (CBCL).

The CBCL (Achenbach, 1991) is designed to obtain information about children's (ages 4 to 18) problem behaviors and competencies via the report of their caregivers. This form assesses demographic information and information regarding the child's activities, friends, and school performance and 112 statements regarding specific behaviors and whether that statement is not true as far as they know (0), somewhat or sometimes true (1), or very true or often true (2) of the child in the past six months.

The CBCL gives a variety of scores, including individual item scores, a total problems score, and two broad band and nine narrow band syndrome scores. The syndromes were derived using exploratory factor analyses across many studies (see Achenbach, 1991). The broadband clinical scales are internalizing problems and externalizing problems and the narrow band clinical scales are withdrawn, somatic

complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behavior, aggressive behavior, and sex problems.

Each participant's symptomatology was assessed using the CBCL's Total Problems score and the Internalizing and Externalizing scale scores, which for descriptive purposes, were interpreted using the categories of below clinical range, borderline clinical range, and clinical range. For the Total Problems score, T-scores below 60 are considered below the clinical range, T-scores of 60 to 63 are in the borderline clinical range, and T-scores above 63 are in the clinical range. For the Internalizing and Externalizing scores, T-scores below 67 are considered below the clinical range, T-scores of 67 to 70 are in the borderline clinical range, and T-scores above 70 are in the clinical range. For the purposes of data analyses, raw CBCL scores were used.

Inter-rater reliability (.95 - .96) and test-retest reliability (.89 - .93) for the scales of interest from the CBCL were high (for a more detailed description of reliability and validity, see Achenbach, 1991). Convergent validity was measured through correlation with other measures and ranged from about .60 to .90 (Achenbach, 1991).

#### Multi-Sector Service Contact Questionnaire (MSSC).

The MSSC consists of 25 questions regarding the services that the child and/or family have received during the past 6 months. The services included in the questionnaire are, (a) assessment and evaluation services, (b) crisis stabilization services, (c) family preservation services, (d) medication treatment and monitoring, (e) group therapy, (f) individual therapy, (g) case management or service coordination, (h) family therapy, (i) day treatment, (j) residential therapeutic or wilderness program, (k) inpatient

hospitalization, (l) residential treatment center, (m) therapeutic group home, (n) therapeutic foster care, (o) behavioral/therapeutic aide services, (p) independent living services, (q) transition services, (r) caregiver or family support services, (s) recreational activities, (t) regular after-school programs and child care, (u) transportation services, (v) respite care, (w) flexible funds, and (x) any other service the child and/or family may have received that was not listed. Family preservation services consist of intensive, in-home, short-term professional work with the child and family. For each service, the family is asked a series of questions regarding whether they received the service (yes or no), where the service was provided (1 = mental health clinic or private provider, 2 = school, 3 = juvenile court/probation, 4 = social services or Child Welfare office, 5 = community location or service center, i.e., YMCA, place of worship, 6 = psychiatric hospital/psychiatric unit, 7 = medical hospital, 8 = home, 9 = non-hospital residential setting, 10 = jail, 11 = other setting), how many times the service was received during the time period, during which part of the time period (1 = first part, 2 = second (middle) part, 3 = third (last) part, 4 = all of the above, 5 = first part and second part, 6 = first part and third part, 7 = second part and third part), and how well the service met the family and child's needs (1 = not at all well, 2 = somewhat well, 3 = moderately well, 4 = very well, 5 = extremely well).

Information on validity is not currently available. For the items that asked about whether the service was received in the past six months, reliability is reported to be adequate, with Cronbach's alpha estimated at .98 (ORC Macro, 2000). For the purposes of this study, level of services was defined as number of contacts the child and family had



with their case manager and the number of sessions of individual therapy, family therapy, and group therapy in which the child and/or family participated. These four services were chosen a priori because it was hypothesized that these would be the most frequently accessed services due to their availability in most areas and their less specialized scope of treatment, for example as opposed to residential treatment or therapeutic foster care. For the items that asked about whether or not the service was received in the past six months for the current study at twelve-month follow-up, reliability is adequate, with Cronbach's alpha estimated at .63 for six-month follow-up and .67 for twelve-month follow-up.

#### Wraparound Fidelity Index-3.0 (WFI-3.0).

The WFI-3.0 (Suter et al., 2003) is designed to assess adherence to the 11 elements of the wraparound process for families who are enrolled in services via the use of either face-to-face or telephone interviews. These 11 elements include:

1. Parent and Youth Voice and Choice,
2. Youth and Family Team
3. Community-Based Services and Supports,
4. Cultural Competence,
5. Individualized Services and Supports,
6. Strengths-Based Services and Supports,
7. Natural Supports,
8. Continuation of Care,
9. Collaboration,
10. Flexible Resources and Funding, and

## 11. Outcome-Based Services and Supports.

These confidential interviews are conducted using three different respondents, parents or other caregivers, youths age 11 and older, and wraparound facilitators. The respondent's answers are confidential in that service providers do not know how each individual respondent answered the questions. The WFI-3.0 consists of four forms, a Caregiver form and a Resource Facilitator form that each consists of 44 items making up the 11 elements; a Youth form that consists of 32 items, making up 8 elements; and an additional demographic form that is completed by the wraparound facilitator. The Youth form asks only about Parent and Youth Voice and Choice, Youth and Family Team, Community-Based Services and Supports, Cultural Competence, Individualized Services and Supports, Strengths-Based Services and Supports, Natural Supports, and Continuation of Care. Youths are not asked about Collaboration, Flexible Resources and Funding, and Outcome-Based Services and Supports as it is believed that youths will not have sufficient information to answer questions regarding these elements. Each item is scored from 0 to 2 (0 being low adherence, 1 being moderate adherence, and 2 being strong adherence) by trained interviewers, which results in each element having fidelity scores ranging from 0 (low fidelity) to 8 (high fidelity). Mean element scores are used to calculate an overall element score ranging from 0 to 8 for each of the 11 elements and an overall fidelity score ranging from 0 to 8.

Internal consistency for the WFI Total scores on past data, as measured by Cronbach alpha coefficients, was high (Caregiver form = .91; Youth form = .84; Resource Facilitator form = .82; Suter, et al., 2005). Alpha coefficients for individual

elements ranged from .43 to .69 for the Resource Facilitator form of the WFI-3, with only three of eleven Elements achieving alpha scores above .60. For the Caregiver form of the WFI-3, alphas for individual elements were found to range from .23 to .73; however, eight of the eleven elements achieved alpha coefficients above .60. Finally, for the Youth form of the WFI-3, alphas were found to range from .26 to .70; with four of the eight Elements assessed achieving alpha coefficients above .60. Two-week test-retest reliability for the WFI Total scores, as measured by Pearson correlations were found to be  $r = .88$  for Caregiver form,  $p < .05$ ;  $r = .84$  for Resource Facilitator form,  $p < .05$ ; and  $r = .64$  for Youth form,  $p < .10$  (Maupin, 2003). Inter-respondent agreement, as measured by intraclass correlations (ICC's), were .58 for all three respondents, .44 for RF-CG agreement, .49 for CG-Y agreement, and .45 for RF-Y agreement (Leverentz-Brady, Suter, & Bruns, 2005).

Internal consistency for the WFI Total scores for the current study at six-month follow-up, as measured by Cronbach alpha coefficients, was adequate (Caregiver form = .84; Youth form = .82; Resource Facilitator form = .83). Alpha coefficients for individual elements ranged from .11 to .57 for the Resource Facilitator form of the WFI-3, with none of eleven Elements achieving alpha scores above .60. For the Caregiver form of the WFI-3, alphas for individual elements were found to range from .27 to .73; however, five of the eleven elements achieved alpha coefficients above .60. Finally, for the Youth form of the WFI-3, alphas were found to range from .21 to .72; with two of the eight Elements assessed achieving alpha coefficients above .60. Inter-respondent agreement for this study at six-month follow-up was similar to that for other multiple

informant measures (Achenbach, McConaughy, & Howell, 1987), with ICC's of .38 for all three respondents, .23 for RF-CG agreement, .39 for CG-Y agreement, and .26 for RF-Y agreement.

Internal consistency for the WFI Total scores for the current study at twelve-month follow-up, as measured by Cronbach alpha coefficients, ranged from poor to moderate (Caregiver form = .19; Youth form = .57; Resource Facilitator form = .67). Alpha coefficients for individual elements ranged from .09 to .59 for the Resource Facilitator form of the WFI-3, with none of eleven Elements achieving alpha scores above .60. For the Caregiver form of the WFI-3, alphas for individual elements were found to range from .15 to .82; however, five of the eleven elements achieved alpha coefficients above .60. Finally, for the Youth form of the WFI-3, alphas were found to range from .11 to .61; with one of the eight Elements assessed achieving alpha coefficients above .60. Inter-respondent agreement for this study at twelve-month follow-up was variable with ICCs of .10 for all three respondents, .60 for RF-CG agreement, .61 for CG-Y agreement, and .51 for RF-Y agreement.

Support for the content validity of the WFI-3 items can be found by reviewing the history of the development and revision of the measure. During these efforts, dozens of stakeholders representing many different perspectives helped nominate and select indicators of adherence to the 11 elements, and then helped construct the wording of the items. Additional support for the construct validity of the WFI-3 comes from a recent confirmatory factor analysis (CFA) of the measure. CFA seeks to confirm that there is good "fit" between scale items and a proposed set of factors (i.e., wraparound principles)

they are intended to measure. Using WLSMV estimation, CFA of the Caregiver form of the WFI-3 found a Root Mean Square Error of Approximation (RMSEA) of 0.059 for a 44-item solution. This was an encouraging result, given that a RMSEA of 0.060 or lower indicates a good “fit” of items to a proposed factor structure. This “fit coefficient” was better than was obtained for a one-factor model (parsimony test), which yielded a RMSEA of 0.067. The results provide support for the indicators selected to measure adherence to the 11 elements. The results also provide support for using both individual WFI-3 items and element scores to describe a community or program’s wraparound adherence. Support has been found for the discriminant validity of the WFI-3 in a number of studies (for a description of these, see Suter, et al., 2005.) Construct validity of the WFI using WFI Total scores for each respondent and external expert ratings of fidelity was found using Pearson correlations (Caregiver form,  $r = .47$ ,  $p < .05$ ; Resource Facilitator form,  $r = .48$ ,  $p < .05$ ; Youth form,  $r = .47$ ,  $p < .05$ ). The Overall Composite WFI Total scores, across all three informants, and external expert ratings were found to correlated at  $r = .54$ ,  $p < .01$ .

### *Procedure*

Families were referred for the national evaluation study at individual sites. Following referral informed consent and assent were obtained for the outcome measures, including the CAFAS, CBCL, and MSSC. The CAFAS and CBCL were administered at baseline. The outcome measures, including the CAFAS, CBCL, and MSSC, were administered again six months and again twelve months after enrollment by site evaluation staff. Individual sites reimbursed caregivers and youths for their time.

Interviews for the outcome measures were typically done face-to-face. Interviews at follow-up were attempted even if the family was no longer receiving services.

When families had received services for five months, the caregiver and youth (if 11 or older) were asked to sign a consent-to-contact form in order to be contacted about a study involving the WFI. An additional consent procedure was implemented for the WFI, such that consent and assent for the study were obtained separately for the outcomes measures and for the WFI. Informed consent was also obtained from the wraparound facilitator for participation in the study. This portion of the study was approved by the Institutional Review Boards (IRBs) at the University of Vermont, the University of Maryland, and the University of Washington. The caregiver and youth's contact information was then relayed to the Wraparound Evaluation and Research Team (WERT). A member of WERT contacted the caregiver and youth, described the study involving the WFI, and obtained verbal consent to complete the WFI interview. After the interview had been completed via the telephone by a member of WERT, consent and assent forms were mailed to the caregiver and youth to be signed and returned, and the caregiver was reimbursed 20 dollars and the youth 10 dollars as participation incentives. All three respondents, wraparound facilitator, caregiver, and youth, were then contacted again twelve-months after they were enrolled into services for the twelve month follow-up and caregivers were again compensated 20 dollars and youth 10 dollars as participation incentives. Interviews at follow-up were attempted if the family had received services for at least 30 days over the six-month time period.

## Results

### *Preliminary Analyses*

#### Data Screening.

Prior to primary data analyses, all measures were screened for accuracy of data entry and fit between their distributions and the assumptions of multiple regression. No outliers were found for any of the variables. The Kolmogorov-Smirnov statistic was used to test for normality of distributions. A significant result for this statistic suggests that the variable in question was not normally distributed. The level of services utilized at both six-month and twelve-month follow-up were positively skewed ( $p < .05$ ). Square root transformations were applied at both time points resulting in non-significant tests for departure from normality. None of the other variables screened had significant tests for departure from normality.

#### Missing Data.

All variables on which there was missing data were analyzed using chi-square or one-way Analysis of Variance to determine if there were significant differences between those families with and without complete data. Total number and percentage of missing values for each outcome measure and the WFI are displayed in Table 2.

For the outcome measures, the CBCL Externalizing Score, Internalizing Score, and Total Problem Score, and the CAFAS five domain score, 21% of the sample had at least one score missing at baseline, 39% at six-month follow-up, and 59% at twelve-month follow-up. For the Overall Composite WFI Total score, 7% of the sample was missing this score at six-month follow-up and 69% of the sample was missing this score

at twelve-month follow-up. No significant differences were found between those families with complete data and those with missing data based on the child's age, gender, race, or custody status. There was a significant difference ( $p = .03$ ) for Hispanic ethnicity between those families with complete WFI data at six-month follow-up and those with missing WFI data at six-month follow-up. However, there were only eight participants in the full sample who were of Hispanic ethnicity; two of those eight participants were missing WFI data at six-month follow-up. This significant finding is likely a result of the small number of participants of Hispanic ethnicity. There were no significant differences between those families with complete or missing data based on whether or not they had completed the outcome measures or the WFI. Due to the lack of significant differences between those families with complete data and those with missing data (with the exception of Hispanic ethnicity as discussed above), multiple imputation (MI) of missing data was used as it is assumed all missing data is missing at random.

There are a number of statistical techniques for handling missing data. The simplest is listwise deletion, however this technique greatly reduces the amount of data to be analyzed. Other techniques include pairwise deletion, dummy variable adjustment, and maximum likelihood methods. Each of these techniques has restrictions on when they can be used and the value of the findings produced from them (Allison, 2001). MI is a statistical method of dealing with the problem of missing data that has become increasingly praised (Schafer, 2000). When data are missing at random, MI is advantageous because of its lack of bias for dealing with the missing data relative to other available methods, and can be used with most data sets (Allison, 2001).



**Table 2: Missing Data Across Variables and Time Points**

	Number	Percentage
Outcomes Measures Only		
Any Baseline	25	21%
Any 6-Month Follow-Up	47	39%
Any 12-Month Follow-Up	71	59%
Baseline		
CBCL Internalizing	21	17%
CBCL Externalizing	21	17%
CBCL Total Problems	23	19%
CAFAS 5 Scale	23	19%
Six-Month Follow-Up		
CBCL Internalizing	42	35%
CBCL Externalizing	42	35%
CBCL Total Problems	42	35%
CAFAS 5 Scale	47	39%
WFI	8	7%
Twelve-Month Follow-Up		
CBCL Internalizing	68	56%
CBCL Externalizing	68	56%
CBCL Total Problems	68	56%
CAFAS 5 Scale	71	59%
WFI	83	69%

One hindrance to using multiple imputation, its complexity and difficulty, is overcome through the use of Schafer's NORM software (Schafer, 2000). Another hindrance to using MI is that, because different imputations are generated each time it is used, it is possible to get different imputed numbers each time. However, by analyzing descriptive data, one can view how closely the data after MI resembles that of the data before and after imputations. Table 3 - Table 8 display descriptive statistics on study variables before and after MI. In addition, one of the assumptions of MI is that the

variables in question are normally distributed (Allison, 2001). This assumption was examined and rectified in the previous section on Data Screening. Finally, MI of missing data was used only for baseline and six-month follow-up data, and not for twelve-month follow-up data, because of the large amount of missing data at twelve-month follow-up (see Table 2).

**Table 3: Change Over Time for Functional Impairment Overall and By Site**

	Baseline		6-Month		12-Month
	Before MI	After MI	Before MI	After MI	
Overall					
Mean	79.80	79.75	69.10	70.36	72.08
SD	25.92	27.85	28.48	30.57	26.99
<i>N</i>	101	121	78	121	53
Site 1					
Mean	87.39	87.74	75.79	77.58	81.25
SD	20.70	24.66	28.34	28.86	27.39
<i>N</i>	46	62	38	62	24
Site 2					
Mean	80.83	78.16	66.40	67.26	69.33
SD	26.87	28.65	26.44	31.82	26.31
<i>N</i>	36	38	25	38	15
Site 3					
Mean	59.47	59.05	56.67	54.67	59.29
SD	25.92	25.08	28.95	27.47	22.35
<i>N</i>	19	21	15	21	14

**Table 4: Change Over Time for CBCL Total Problem Score Overall and By Site**

	Baseline		6 Month		12 Month
	Before MI	After MI	Before MI	After MI	
Overall					
Mean	69.08	70.45	59.29	60.91	56.82
SD	27.88	27.02	27.98	28.32	27.35
<i>N</i>	103	121	82	121	56
Site 1					
Mean	70.91	73.69	68.58	65.56	59.79
SD	29.18	27.01	29.42	29.26	28.58
<i>N</i>	46	62	38	62	24
Site 2					
Mean	70.25	69.24	55.60	56.47	63.60
SD	27.07	26.98	23.49	24.93	24.43
<i>N</i>	36	38	25	38	15
Site 3					
Mean	63.05	63.05	55.58	55.19	53.24
SD	26.78	26.78	30.57	30.21	28.61
<i>N</i>	21	21	19	21	17

**Table 5: Change Over Time for CBCL Internalizing Problem Score Overall and By Site**

	Baseline		6 Month		12 Month
	Before MI	After MI	Before MI	After MI	
Overall					
Mean	15.38	15.50	14.29	14.37	13.55
<i>SD</i>	9.03	8.92	8.70	8.81	9.28
<i>N</i>	103	121	82	121	56
Site 1					
Mean	15.02	15.55	14.84	14.95	14.71
<i>SD</i>	10.33	9.79	9.52	9.46	9.91
<i>N</i>	46	62	38	62	24
Site 2					
Mean	15.61	15.26	12.92	13.34	15.00
<i>SD</i>	7.64	7.75	6.47	7.25	9.73
<i>N</i>	38	38	25	38	19
Site 3					
Mean	15.76	15.76	12.60	14.52	12.76
<i>SD</i>	8.54	8.54	8.15	9.61	9.65
<i>N</i>	24	21	15	21	17

**Table 6: Change Over Time for CBCL Externalizing Problem Score Overall and By Site**

	Baseline		6 Month		12 Month
	Before MI	After MI	Before MI	After MI	
Overall					
Mean	27.67	28.41	23.07	24.03	23.27
SD	12.68	12.53	11.60	12.18	11.27
<i>N</i>	103	121	82	121	56
Site 1					
Mean	28.72	30.19	25.37	26.53	23.46
SD	11.74	11.50	12.48	12.69	11.69
<i>N</i>	46	62	38	62	24
Site 2					
Mean	29.81	29.21	23.36	23.13	27.73
SD	14.24	14.19	9.55	10.56	9.32
<i>N</i>	36	38	25	38	15
Site 3					
Mean	21.71	21.71	18.11	18.29	19.06
SD	12.68	10.36	11.24	11.69	11.26
<i>N</i>	21	21	19	21	17

**Table 7: Number of Services Utilized At Each Time Point Overall and By Site**

	N	Mean	SD	Min	Max
Overall					
Six-Months	64	5.63	2.73	1	13
Six-Months	121	5.91	2.78	0	13
After MI					
Twelve-Months	42	6.43	3.07	1	13
Site 1					
Six-Months	28	6.64	2.91	1	13
Six-Months	62	6.68	2.83	1	13
After MI					
Twelve-Months	16	8.06	3.39	3	13
Site 2					
Six-Months	23	4.74	2.26	1	9
Six-Months	38	4.87	2.38	0	9
After MI					
Twelve-Months	13	4.62	2.02	1	8
Site 3					
Six-Months	13	5.00	2.55	2	9
Six-Months	21	5.52	2.69	1	10
After MI					
Twelve-Months	13	6.23	2.55	2	10

**Table 8: Fidelity Overall and By Informant At Each Time Point**

	Overall		Site 1		Site 2		Site 3	
	Before MI	After MI	Before MI	After MI	Before MI	After MI	Before MI	After MI
6 Mo. Follow-up								
WFI Total Mean	6.21	6.25	6.21	6.25	6.03	6.07	6.23	6.29
SD	0.87	0.76	0.87	0.76	0.85	0.80	1.09	0.94
<i>N</i>	113	121	113	121	37	38	18	21
RF Total Mean	6.48	6.44	6.48	6.44	6.39	6.35	6.43	6.41
<i>SD</i>	0.75	0.74	0.75	0.74	0.68	0.65	1.27	1.08
<i>N</i>	93	121	93	121	28	38	13	21
CG Total Mean	6.06	6.14	6.23	6.28	5.74	5.95	6.12	6.06
SD	1.30	1.30	1.25	1.26	1.43	1.35	1.19	1.36
<i>N</i>	84	121	44	62	25	38	15	21
Y Total Mean	6.07	6.19	6.32	6.28	5.16	5.92	6.74	6.40
SD	1.10	1.16	1.00	1.06	1.11	1.27	0.28	1.22
<i>N</i>	42	121	22	62	12	38	8	21
12-Mo. Follow-up								
WFI Total Mean	6.07		6.50		4.79		6.21	
SD	1.19		0.71		1.57		0.69	
<i>N</i>	38		25		9		4	
RF Total Mean	6.44		6.47		5.88		6.73	
SD	0.71		0.72		0.87		0.52	
<i>N</i>	25		21		2		2	
CG Total Mean	5.84		6.59		4.75		6.14	
SD	1.44		0.80		1.72		0.70	
<i>N</i>	22		10		8		4	
Y Total Mean	6.24		6.71		5.50		6.42	
SD	0.63		0.44		0.13		0.12	
<i>N</i>	9		4		3		2	

### Demographic Characteristics.

Table 9 displays demographic characteristics for each time point of measurement without use of MI. At baseline, there were no statistically significant differences between the three sites for age ( $F(2, 118)=2.29$ , n.s.), ethnicity ( $\chi^2 = 2.43$ , n.s.), or clinical diagnosis ( $\chi^2 = 10.64$ , n.s.). There were site differences for gender ( $\chi^2 = 6.32$ ,  $p < .05$ ), race ( $\chi^2 = 13.47$ ,  $p < .01$ ), and custody status ( $\chi^2 = 53.91$ ,  $p < .01$ ). At six-month follow-up, there were no significant differences between the three sites on age ( $F(2, 79)=2.64$ , n.s.), ethnicity ( $\chi^2 = 4.11$ , n.s.), and clinical diagnosis ( $\chi^2 = 8.67$ , n.s.). There were statistically significant differences on gender ( $\chi^2 = 7.79$ ,  $p < .05$ ), race ( $\chi^2 = 11.98$ ,  $p < .05$ ), and custody status ( $\chi^2 = 36.56$ ,  $p < .01$ ). At twelve-month follow-up, there were no statistically significant differences between the three sites on gender ( $\chi^2 = 5.02$ , n.s.), ethnicity ( $\chi^2 = 0.13$ , n.s.), and clinical diagnosis ( $\chi^2 = 4.50$ , n.s.). There were significant differences on age ( $F(2, 53)=3.47$ ,  $p < .05$ ), race ( $\chi^2 = 13.10$ ,  $p < .05$ ), and custody status ( $\chi^2 = 28.52$ ,  $p < .01$ ).



**Table 9: Demographic Characteristics for Youth Participants for Each Site at Baseline, Six-Month, and Twelve-Month Follow-Up**

Demographic	Baseline			6-Month			12-Month		
	Site1	Site2	Site3	Site1	Site2	Site3	Site1	Site2	Site3
	N=62	N=38	N=21	N=38	N=25	N=19	N=24	N=15	N=17
Mean age	12.8	11.9	11.4	13.3	12.4	11.8	14.3	12.9	12.3
Gender									
Male	45	20	17	28	11	15	18	8	15
Female	17	18	4	10	14	4	6	7	2
Race									
American Indian / Alaskan Native	0	0	0	0	0	0	0	0	0
Asian	0	0	0	0	0	0	0	0	0
African American	29	18	2	16	13	2	11	9	2
Native Hawaiian or Other Pacific Islander	0	0	0	0	0	0	0	0	0
White	27	19	18	18	11	16	10	6	14
Multi-racial	0	0	0	0	0	0	0	0	0
Other or Missing	6	1	1	4	1	1	3	0	1
Hispanic Ethnicity	3	2	3	1	1	3	1	1	1
Primary Diagnosis									
Adjustment Disorders	2	1	0	1	0	0	0	0	0
Autism and Related Disorders	0	2	0	0	0	1	0	0	0
Anxiety Disorders	4	2	0	1	0	1	1	0	0
Disruptive Disorders	29	17	12	1	4	0	1	1	2
Learning Disorders and Mental retardation	1	0	0	0	0	0	0	0	0
Mood Disorders	19	12	4	1	0	0	0	0	0
Personality Disorders	0	0	0	0	0	0	0	0	0
Psychosis	3	2	1	0	0	0	0	1	0
Other or Missing	4	2	4	34	24	17	22	13	15
Custody Status									
Two parents	6	8	15	5	7	13	1	5	12
Biological mother only	27	19	3	15	12	2	12	6	4

Biological father only	2	3	2	2	0	1	0	0	0
Adoptive parent(s)	3	0	1	1	1	1	4	0	1
Grandparents	4	5	0	4	5	0	2	3	0
Ward of the state	17	0	0	9	0	0	4	0	0
Other or Missing	3	3	0	2	0	2	1	1	0

### Level of Functioning.

The participant's level of functioning, as indexed by the CAFAS five levels of impairment, indicated that, on average, participants from all three sites at baseline, six-month, and twelve-month follow-up, were scored as having moderate to severe functional impairment (see Table 10).

**Table 10: Participant's Level of Functioning At Each Time Point and Site**

	Overall	Site 1	Site 2	Site 3
Baseline	<i>N</i> = 101	<i>N</i> = 46	<i>N</i> = 36	<i>N</i> = 19
No/Minimal	1%	0%	0%	5%
Mild	3%	0%	3%	11%
Moderate	23%	11%	31%	37%
Marked	30%	35%	25%	26%
Severe	44%	54%	42%	21%
6-Month Follow-Up	<i>N</i> = 78	<i>N</i> = 38	<i>N</i> = 25	<i>N</i> = 15
No/Minimal	1%	0%	0%	7%
Mild	10%	5%	16%	13%
Moderate	31%	26%	36%	33%
Marked	27%	37%	12%	27%
Severe	31%	32%	36%	20%
12-Month Follow-up	<i>N</i> = 53	<i>N</i> = 24	<i>N</i> = 15	<i>N</i> = 14
No/Minimal	0%	0%	0%	0%
Mild	9%	4%	13%	14%
Moderate	25%	17%	20%	43%
Marked	34%	42%	27%	29%
Severe	32%	38%	40%	14%

For the purposes of the data analyses, the five domain score was used. For a breakdown of mean CAFAS five domain scores at each time point, see Table 3. There were statistically significant differences between the three sites at baseline ( $F(2, 98)=9.12, p<.01$ ) and twelve-month follow-up ( $F(2, 50)=3.31, p<.05$ ) but not at six-month follow-up ( $F(2, 75)=2.71, n.s.$ ). Using Least Square Differences (LSD) post hoc comparisons, between the three sites at baseline, participants from Site 3 scored significantly lower than participants from Site 1 and Site 2 ( $p<.01$ ). At twelve-month follow-up, participants from Site 3 scored significantly lower than participants from Site 1 ( $p<.05$ ). Participants from Site 1 scored the highest of all three sites at all three time points, meaning that the participant's from Site 1 were scored as having higher impairment than participants from the other two sites.

The participant's functional impairment showed statistically significant change over time for Site 1 ( $F(2)=123.80, p<.01$ ), Site 2 ( $F(2)=80.45, p<.01$ ), and Site 3 ( $F(2)=37.56, p<.01$ ). Functional impairment scores for participants from all three sites significantly decreased from baseline to six-month follow-up, and then increased from six-month to twelve-month follow-up.

#### Psychological Symptoms.

The participant's psychological symptoms, as indexed by the CBCL's Total Problems score and the Internalizing and Externalizing scale scores, indicated that, at baseline, six-month, and twelve-month follow-up, the majority of participants from all three sites scored in the borderline to clinical range for total behavior problems, internalizing symptoms, and externalizing symptoms (see Table 11).

**Table 11: Participant's Psychological Symptoms Overall and By Site**

	Overall	Site 1	Site 2	Site 3
Baseline Total Score	N=101	N=45	N=36	N=20
Below Clinical Range	10%	9%	11%	10%
Borderline	10%	11%	6%	15%
Clinical Range	80%	80%	83%	75%
Baseline Internalizing	N=103	N=46	N=36	N=21
Below Clinical Range	36%	41%	31%	33%
Borderline	11%	9%	11%	14%
Clinical Range	53%	50%	58%	52%
Baseline Externalizing	N=103	N=46	N=36	N=21
Below Clinical Range	17%	15%	11%	29%
Borderline	14%	11%	14%	19%
Clinical Range	70%	74%	75%	52%
6-Month Total Score	N=82	N=38	N=25	N=19
Below Clinical Range	21%	18%	16%	32%
Borderline	13%	16%	20%	0%
Clinical Range	66%	66%	64%	68%
6-Month Internalizing	N=82	N=38	N=25	N=19
Below Clinical Range	44%	45%	40%	47%
Borderline	12%	8%	28%	0%
Clinical Range	44%	47%	32%	53%
6-Month Externalizing	N=82	N=38	N=25	N=19
Below Clinical Range	26%	29%	16%	32%
Borderline	10%	5%	12%	16%
Clinical Range	65%	66%	72%	53%
12-Month Total Score	N=56	N=24	N=15	N=17
Below Clinical Range	16%	13%	7%	29%
Borderline	11%	8%	20%	6%
Clinical Range	73%	79%	73%	65%
12-Month Internalizing	N=56	N=24	N=15	N=17
Below Clinical Range	41%	33%	53%	41%
Borderline	14%	21%	13%	6%
Clinical Range	45%	46%	33%	53%
12-Month Externalizing	N=56	N=24	N=15	N=17
Below Clinical Range	21%	21%	0%	41%
Borderline	9%	13%	7%	6%
Clinical Range	70%	67%	93%	53%

Mean CBCL raw scores at each time point for the Total Problem scores, Internalizing Problem scores, and Externalizing Problem scores, are displayed in Table 4 - Table 6.

For externalizing problems, there were statistically significant differences between the three sites at baseline ( $F(2, 100)=3.11, p<.05$ ) only. For the total problems and internalizing problems, there were no statistically significant differences between the three sites at any of the three time points. Post hoc comparisons between the three sites at baseline indicated that Site 3 participants exhibited significantly fewer externalizing symptoms than Site 1 and Site 2 ( $p<.05$ ). At six-month follow-up, participants at Site 3 exhibited fewer externalizing symptoms at six-month follow-up than participants at Site 1 ( $p<.05$ ). At twelve-month follow-up, participants at Site 3 exhibited fewer externalizing symptoms at twelve-month follow-up than participants at Site 2 ( $p<.05$ ).

The participant's total psychological symptoms significantly decreased over time for Site 1 ( $F(2, 20)=4.59, p<.05$ ) and Site 3 ( $F(2, 14)=5.32, p<.05$ ) only. The participant's externalizing symptoms significantly decreased over time for Site 3 ( $F(2, 14)=5.38, p<.05$ ) only. The participant's internalizing symptoms did not significantly change over time for any of the three sites.

#### Service Utilization.

Service utilization, as indexed by the MSSC, indicated that the most frequently accessed services were assessment and evaluation, medication treatment/monitoring, case management, family therapy, group therapy, and individual therapy. For a description of services utilized, see Table 12.

**Table 12: Participant's Service Utilization at Each Time Point and Site**

Services	Site 1		Site 2		Site 3	
	6-Mo.	12-Mo.	6-Mo.	12-Mo.	6-Mo.	12-Mo.
Any Services	55%	31%	61%	87%	76%	71%
Assessment/Evaluation	40%	19%	40%	26%	38%	33%
Crisis Stabilization	6%	6%	5%	5%	5%	10%
Family Preservation	12%	8%	8%	3%	5%	5%
Medication Treatment	35%	20%	32%	21%	62%	67%
<i>Group Therapy</i>	<i>29%</i>	<i>17%</i>	<i>16%</i>	<i>8%</i>	<i>29%</i>	<i>24%</i>
<i>Individual Therapy</i>	<i>49%</i>	<i>25%</i>	<i>45%</i>	<i>26%</i>	<i>14%</i>	<i>29%</i>
<i>Case Management</i>	<i>45%</i>	<i>28%</i>	<i>53%</i>	<i>34%</i>	<i>76%</i>	<i>67%</i>
<i>Family Therapy</i>	<i>28%</i>	<i>17%</i>	<i>18%</i>	<i>8%</i>	<i>33%</i>	<i>24%</i>
Day Treatment	3%	3%	0%	0%	5%	14%
Residential Therapeutic Camp or Wilderness Program	2%	2%	0%	0%	5%	0%
Inpatient Hospitalization	3%	8%	5%	3%	5%	10%
RTC	14%	12%	13%	0%	5%	10%
Therapeutic Group Home	0%	2%	0%	0%	0%	0%
Behavioral and Therapeutic Aide	17%	6%	5%	3%	19%	52%
Independent Living	5%	2%	0%	0%	0%	0%
Transition	2%	0%	3%	0%	0%	10%
Caregiver and Family Support	17%	11%	8%	8%	52%	48%
Recreational Activities	17%	15%	11%	5%	29%	19%
Child Care	8%	2%	5%	3%	10%	0%
Transportation	23%	8%	13%	5%	38%	38%
Respite Care	5%	2%	3%	0%	5%	5%
Flexible Funds	12%	9%	16%	3%	5%	10%

The number of services accessed by participants varied greatly across the three sites (see Table 7), with participants utilizing as few as one service the previous six months to as many as thirteen services. There was a statistically significant difference between sites in the number of services utilized (six-month follow-up,  $F(2, 61)=3.79$ ,  $p<.05$ ; twelve-month follow-up,  $F(2, 39)=5.58$ ,  $p<.01$ ). Post hoc comparison between the

three sites at both six-month and twelve-month follow-up indicated that Site 1 and Site 2 significantly differed in the number of services utilized ( $p<.05$ ), with participants from Site 1 accessing more services than participants from Site 2.

#### Fidelity.

Fidelity to the wraparound process was assessed using the WFI. Overall composite fidelity scores for each site are displayed in Table 8. For overall adherence to the wraparound process, there were statistically significant differences between the three sites at twelve-month follow-up ( $F(2, 35)=10.12, p<.01$ ), but not at six-month follow-up ( $F(2, 110)=1.23, n.s.$ ). Post hoc comparison between the three sites at twelve-month follow-up indicated that Site 2 scored significantly lower than both Site 1 ( $p<.01$ ) and Site 3 ( $p<.05$ ), meaning that Site 2 had lower adherence to wraparound than Sites 1 and 3.

At six-month versus twelve-month follow-up, there was a statistically significant difference between the overall adherence for Site 2 ( $F(1, 8)=24.23, p<.01$ ) only. However, for Site 2, the overall adherence to the wraparound process significantly decreased from six-month to twelve-month follow-up, meaning that Site 2 had higher adherence to wraparound at six-month than at twelve-month follow-up.

The Overall Composite WFI Total score can be broken down by respondents—resource facilitators, caregivers, and youths. For a description of the fidelity scores by respondents for each site and time point, see Table 8. For adherence to the wraparound process as reported by the resource facilitator, there were no statistically significant differences between the three sites at six-month or twelve-month follow-up. For adherence to the wraparound process as reported by the caregiver, there were statistically

significant differences between the three sites at twelve-month follow-up ( $F(2, 19)=5.29$ ,  $p<.05$ ) only. Post hoc comparison between the three sites at twelve-month follow-up indicated that Site 2 scored significantly lower than Site 1 ( $p<.01$ ) but not Site 3, meaning Site 2 had lower adherence to wraparound than Site 1 at twelve-month follow-up as measured by the caregiver reports. For adherence to the wraparound process as reported by the youths, there were statistically significant differences between the three sites at both six-month ( $F(2, 29)=8.24$ ,  $p>.01$ ) and twelve-month follow-up ( $F(2, 6)=12.54$ ,  $p<.01$ ). Post hoc comparison between the three sites at six-month follow-up indicated that Site 2 scored significantly lower than Site 1 ( $p<.01$ ) and Site 3 ( $p<.01$ ), meaning Site 2 had lower adherence to wraparound than Sites 1 and 3 at six-month follow-up as measured by the youths reports. Between the three sites at twelve-month follow-up, Site 2 also scored significantly lower than Site 1 ( $p<.01$ ) and Site 3 ( $p<.05$ ), meaning Site 2 had lower adherence to wraparound than Sites 1 and 3 at twelve-month follow-up as measured by the youths reports.

For adherence to the wraparound process as reported by the caregiver, there was a statistically significant difference at six-month versus twelve-month follow-up for Site 2 ( $F(1, 7)=30.18$ ,  $p<.01$ ) only. However, just as for Site 2's overall adherence to the wraparound process, the adherence as reported by the caregiver significantly decreased from six-month to twelve-month follow-up, meaning Site 2's adherence to wraparound as reported by the caregiver was higher at six-month than at twelve-month follow-up. For adherence to the wraparound process as reported by the resource facilitators and youths,



there were no statistically significant differences between the fidelity scores at six-month versus twelve-month follow-up for any of the three sites.

### *Hypothesis One*

Hypothesis 1 stated that the level of adherence to the wraparound process by wraparound facilitator would predict child outcomes. To test this hypothesis, data were analyzed using a hierarchical linear regression model where the independent variable was fidelity to the wraparound process as measured by the Overall Composite WFI Total score at six-month follow-up and the dependent variables were child outcomes at six-month follow-up, as measured by the CBCL Total Problems, Internalizing, and Externalizing Scores and the CAFAS five domain score. Demographic variables that differed by site, participant's age, gender, racial group, and custody status, were controlled for by entering the variables as covariates.

Additionally, because of the heterogeneous nature of the sample, it was not expected that there would be uniform effects across all outcome variables. Consequently, for all analyses, each child outcome measure was analyzed separately. Specifically, children were expected to have different patterns of behavioral problems, for example, one child might have scored high on the Internalizing Problems scale of the CBCL and low on the Externalizing Problems scale while another child might have scored the opposite. Thus, each child outcome variable was examined separately to maximize sensitivity to detect a variety of patterns of outcome.

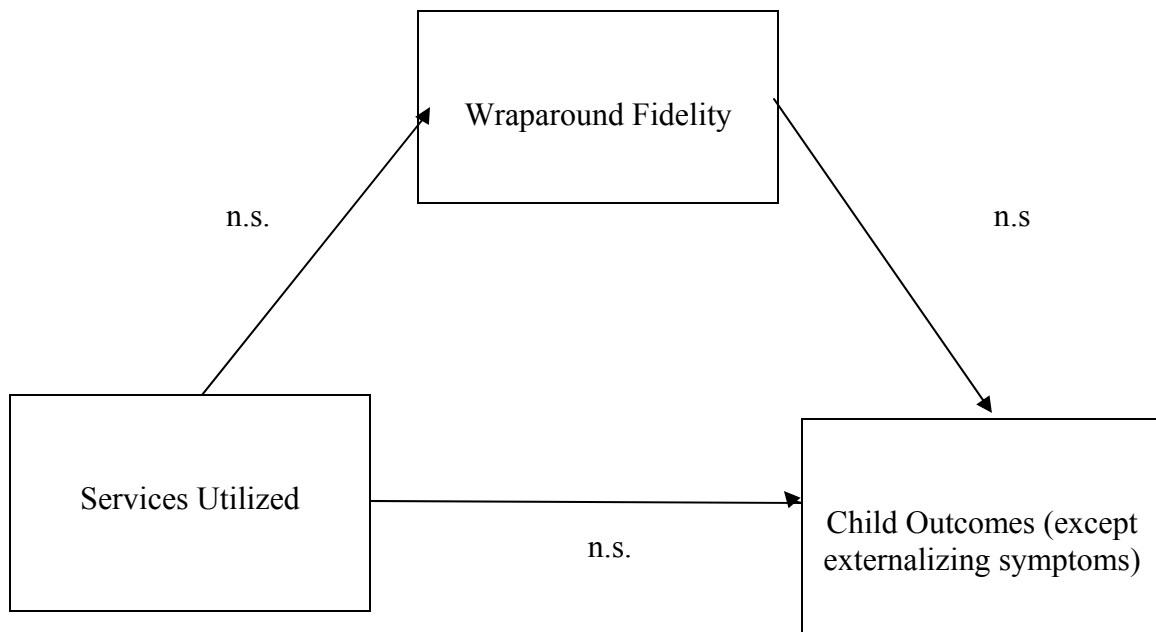
For Hypothesis 1, at six-month follow-up, after MI, none of the dependent variables were significantly related to level of adherence to the wraparound process.

Contrary to Hypothesis 1, the level of adherence to the wraparound process by wraparound facilitator was not found to predict child outcomes.

### *Hypothesis Two*

Hypothesis 2 stated that the level of services the child and family received would predict child outcomes and that this relationship would be mediated by fidelity to the wraparound process (see Figure 3). For hypothesis 2, data were analyzed using a hierarchical linear regression model where the independent variable was level of services received at six-month follow-up, as measured by the MSSC, and the dependent variables were child outcomes at six-month follow-up, as measured by the CBCL Total Problems, Internalizing, and Externalizing Scores and the CAFAS five domain score. The mediator variable was fidelity to the wraparound process as measured by the WFI total score at six-month follow-up. Statistically significant differences in participant's age, gender, racial group, and custody status were controlled for by entering the variables as covariates.

For Hypothesis 2, due to the null findings for Hypothesis 1, a mediation model as proposed in Hypothesis 2 was not viable, because there was no statistically significant relationship between the level of adherence to the wraparound process by wraparound facilitator and child outcomes measures (Baron & Kenney, 1986). However, the remainder of the model was tested.



Please Note: Child outcome measures included CBCL Total Problems, Internalizing, and Externalizing scores and CAFAS five domain total score. Each measure was tested in a separate analysis.

**Figure 3: Mediation Model of Fidelity in the Relationship Between Service Delivery and Child Outcomes At Twelve-Month Follow-up Compared to Baseline and Six-Month Follow-Up**

The first relationship tested was whether or not the level of services utilized was related to the child outcome measures. At six-month follow-up, after MI, the participant's externalizing symptoms were significantly related to the level of services (see Table 13). The participant's total psychological symptoms, internalizing symptoms, and functional impairment were not significantly related to the level of services. Thus, the level of services utilized was found to be associated only with externalizing symptoms.

**Table 13: Summary of Hierarchical Linear Regression Analysis for Level of Services Predicting CBCL Externalizing Problems Score at Six-Month Follow-Up**

	Before Multiple Imputation					After Multiple Imputation				
Variable	<i>B</i>	SE <i>B</i>	$\beta$	<i>t</i>	Sig.	<i>B</i>	SE <i>B</i>	$\beta$	<i>t</i>	Sig.
Age	-0.54	0.46	-0.14	-1.18	0.24	-0.54	0.46	-0.14	-1.18	0.24
Gender	-0.04	2.68	-.002	-0.02	0.99	-0.04	2.69	-.002	-0.02	0.99
Race	-0.83	1.22	-0.08	-0.67	0.50	-0.83	1.22	-0.08	57	0.50
Custody	-0.21	0.38	-0.07	-0.57	0.57	-0.21	0.38	-0.07	-0.09	0.57
Level of Service	1.03	0.41	0.29	2.49	0.02	1.03	0.41	0.29	2.49	0.02
	Note. $R^2 = 0.13$ ( $p = 0.02$ ).					Note. $R^2 = 0.13$ ( $p = 0.02$ ).				

The second relationship tested was whether the level of services utilized was related to the level of adherence to the wraparound process by wraparound facilitator. At six-month follow-up, after MI, the level of services utilized was not significantly related to the level of adherence to the wraparound process by wraparound facilitator. Thus, level of services utilized by families was not predictive of the wraparound facilitator's level of adherence to the wraparound process.

### *Hypothesis Three*

Hypothesis 3 stated that the level of service the child and family received at six-month and twelve-month follow-up would predict child outcomes at twelve-month follow-up compared to baseline and six-month follow-up and that this relationship would be mediated by fidelity to the wraparound process at six-month and twelve-month follow-up, across wraparound facilitators. For hypothesis 3, data was analyzed using a Linear

Mixed Model where the independent variable was level of service received at six-month and twelve month follow-up, as measured by the MSSC at each of the two time points. The dependent variables were the repeated measure of child outcomes at baseline, six-month, and twelve-month follow-up, as measured by the CBCL Total Problems, Internalizing, and Externalizing Scores and the CAFAS five domain score at each of the three time points. The mediator variable was fidelity to the wraparound process as measured by the Overall Composite WFI Total score at six-month and twelve-month follow-up. The subject variable was each wraparound facilitator.

For Hypothesis 3, a mediation model was tested in three steps. The first step examined whether level of services utilized predicted child outcomes at twelve-month follow-up compared to baseline and six-month follow-up. The second step examined whether level of services utilized predicted adherence to the wraparound process by the wraparound facilitator at twelve-month follow-up compared to baseline and six-month follow-up. The third step examined whether adherence to the wraparound process by the wraparound facilitator predicted child outcomes at twelve-month follow-up compared to baseline and six-month follow-up.

Across wraparound facilitators, after MI, none of the child outcomes measures were significantly related to the level of services at twelve-month follow-up compared to baseline and six-month follow-up. Across wraparound facilitators, after MI, adherence to the wraparound process by the wraparound facilitator was not significantly related to the level of services at twelve-month follow-up compared to baseline and six-month follow-up. Additionally, across wraparound facilitators, after MI, none of the child outcomes

measures were significantly related to adherence to the wraparound process by the wraparound facilitator at twelve-month follow-up compared to baseline and six-month follow-up.

### *Exploratory Analyses*

Individual growth models from baseline to six-month and twelve-month follow-up for wraparound fidelity scores and child outcome measures examined patterns of relationships across time. These analyses were conducted using Linear Mixed Models where the independent variable was the level of services received at six-month and twelve month follow-up, and the dependent variables were the repeated measures of child outcomes at baseline, six-month, and twelve-month follow-up, and the measure of adherence to the wraparound model at six-month and twelve-month follow-up. Individual growth curves examine within subject change for each child over time, allowing for the possibility of different patterns of change for each participant. Participant's age, gender, racial group, and custody status were covariates. These exploratory analyses were conducted to generate hypotheses for future studies.

Individual growth models examining wraparound fidelity scores indicated that, across the individual children, the overall fidelity significantly changed from baseline to six-month and twelve-month follow-up (see Table 14). However, when the individual growth models for each separate fidelity informant were tested, there were no statistically significant changes over time for the fidelity as reported by the resource facilitators, caregivers, or youths (see Table 14). Although the overall composite fidelity scores did

change across the twelve months of the study, the fidelity scores as reported by the separate informants did not.

**Table 14: Summary of Linear Mixed Model Testing the Individual Growth Curve for Fidelity to the Wraparound Process Overall and By Informant At Twelve-Month Follow-Up Compared to Baseline and Six-Month Follow-Up**

Variable	B	SE	df	t	Sig.
Overall Composite WFI Total Score					
Intercept	6.83	0.31	41.25	21.96	0.000
Time	-0.31	0.15	37.06	-2.07	0.046
Resource Facilitator WFI Total Score					
Intercept	6.65	0.31	39.26	21.24	0.000
Time	-0.08	0.14	28.32	-0.60	0.55
Caregiver WFI Total Score					
Intercept	7.22	0.45	2.13	15.88	0.003
Time	-0.58	0.22	2.26	-2.67	0.10
Youth WFI Total Score					
Intercept	6.12	0.39	18.63	15.66	0.000
Time	-0.03	0.14	9.34	-0.19	0.85

Individual growth models examining the child outcomes variables indicated that both before and after MI, the participant's functional impairment, total psychological symptoms, and externalizing symptoms significantly changed from baseline to six-month and twelve-month follow-up across the individual children. As expected there was a greater decrease from baseline to six-month follow-up then from six-month to twelve-month follow-up (see Table 15). However, the participant's internalizing symptoms did not significantly change over time before MI but did after MI with a greater decrease from baseline to six-month follow-up than from six-month to twelve-month follow-up,

indicating that there may not have been enough power before MI because of the sample size (see Table 15). The participant's functional impairment, total psychological symptoms, externalizing symptoms, and internalizing symptoms all changed across the twelve months of the study in the expected direction.

**Table 15: Summary of Linear Mixed Model Testing the Individual Growth Curve for the Child Outcomes Measures at Twelve-Month Follow-Up Compared to Baseline and Six-Month Follow-Up**

Variable	Before Multiple Imputation					After Multiple Imputation				
	<i>B</i>	<i>SE</i>	<i>df</i>	<i>t</i>	Sig.	<i>B</i>	<i>SE</i>	<i>df</i>	<i>t</i>	Sig.
CAFAS Five Scale Score										
Intercept	83.60	4.44	230	18.82	0.00	-140.78	26.50	361	-5.31	0.000
Time	-5.09	2.26	230	-2.25	0.03	163.05	12.27	361	13.29	0.000
CBCL Total Problems Score										
Intercept	73.83	4.48	239	16.46	0.000	-142.42	26.91	361	-5.29	0.000
Time	-5.86	2.28	239	-2.58	0.01	157.27	12.46	361	12.62	0.000
CBCL Externalizing Problem Score										
Intercept	29.52	1.94	239	15.25	0.000	-199.79	28.24	361	-7.08	0.000
Time	-2.46	0.98	239	-2.49	0.01	170.06	13.07	361	13.01	0.000
CBCL Internalizing Problems Score										
Intercept	16.13	1.46	238	11.07	0.000	-217.22	28.59	361	-7.59	0.000
Time	-0.82	0.74	238	-1.11	0.27	174.27	13.24	361	13.17	0.000

### *Follow-up Exploratory Analyses*

Hypothesis 1 Follow-Up Analyses. Hypothesis 1, that the level of adherence to the wraparound process by wraparound facilitator would predict child outcomes, was re-analyzed using separate hierarchical linear regression models where the independent variable was fidelity to the wraparound process as measured by each individual informant's WFI Total score (wraparound facilitator, caregiver, and youth) at six-month



follow-up and the dependent variables were child outcomes at six-month follow-up, as measured by the CBCL Total Problems, Internalizing Problems, and Externalizing Problems scores and the CAFAS Five Domain score. Statistically significant differences in participant's age, gender, racial group, and custody status were controlled for by entering the variables as covariates. Each individual informant's WFI Total score was substituted for the Overall Composite WFI Total score due to the large amount of missing data. Each family did not have all three respondents at each of the two time points, therefore the Overall Composite WFI Total score at six-month follow-up is not directly comparable to the Overall Composite WFI Total score at twelve-month follow-up. No significant effects were found.

*Hypothesis 2 Follow-Up Analyses.* Hypothesis 2, stated that the level of services the child and family received would predict child outcomes and that this relationship would be mediated by fidelity to the wraparound process. Data were reanalyzed using the total number of services utilized during the previous six months instead of using the level of services received as defined by the current study. Additionally, Hypothesis 2 was reanalyzed using the fidelity to the wraparound process as measured by each individual informant's WFI Total score (wraparound facilitator, caregiver, and youth) at six-month follow-up. The total number of services received was substituted for the level of services received as defined by the current study because of the possibility that it is not the most frequently accessed services received that are of interest but the total number of services received.

As noted for Hypothesis 1 Follow-up Analyses, each individual informant's WFI Total score was substituted for the Overall Composite WFI Total score due to the large amount of missing data and the Overall Composite WFI Total score at six-month follow-up not being directly comparable to the Overall Composite WFI Total score at twelve-month follow-up.

Consistent with the findings for Hypothesis 2, due to the null findings for the follow-up analyses to Hypothesis 1, a mediation model as proposed in Hypothesis 2 was not viable, because there was no statistically significant relationship between the level of adherence to the wraparound process as reported by the wraparound facilitators, caregivers, or youths and child outcome measures (Baron & Kenny, 1986; see Figure 1). However, the remainder of the model was tested.

At six-month follow-up, before MI, only the participant's functional impairment (see Table 16) was significantly related to the total number of services utilized. After MI, the participant's total psychological symptoms (see Table 17), internalizing symptoms (see Table 18), externalizing symptoms (see Table 19), and functional impairment (see Table 16) were each significantly related to the total number of services utilized.

At six-month follow-up, after MI, the total number of services utilized was not significantly related to overall ratings of adherence. Repeating the above analysis but substituting the separate informant's WFI Total score for the Overall Composite WFI Total score and the total number of services for the level of services variable, found no significant associations for wraparound facilitators, caregivers, or youths.

**Table 16: Summary of Hierarchical Linear Regression Analysis for Number of Services Utilized Predicting CAFAS Five Domain Total Score at Six-Month Follow-Up**

	Before Multiple Imputation					After Multiple Imputation				
Variable	<i>B</i>	SE <i>B</i>	$\beta$	<i>t</i>	Sig.	<i>B</i>	SE <i>B</i>	$\beta$	<i>t</i>	Sig.
Age	0.21	1.37	0.02	0.15	0.88	-0.77	0.86	-0.08	-0.89	0.38
Gender	5.69	7.47	0.09	0.76	0.45	-0.50	5.48	-0.01	-0.09	0.93
Race	-1.09	3.51	-0.04	-0.31	0.76	-1.85	2.41	-0.06	-0.77	0.44
Custody	0.81	1.21	0.09	0.67	0.51	0.34	0.75	0.04	0.45	0.65
No. of Services	2.78	1.35	0.28	2.07	0.04	5.51	0.89	0.51	6.16	0.00000001
	Note. $R^2 = 0.09$ ( $p = 0.04$ ).					Note. $R^2 = 0.26$ ( $p = 0.00000001$ ).				

**Table 17: Summary of Hierarchical Linear Regression Analysis for Number of Services Utilized Predicting CBCL Total Problem Score at Six-Month Follow-Up**

	Before Multiple Imputation					After Multiple Imputation				
Variable	<i>B</i>	SE <i>B</i>	$\beta$	<i>t</i>	Sig.	<i>B</i>	SE <i>B</i>	$\beta$	<i>t</i>	Sig.
Age	-0.86	1.11	-0.10	-0.77	0.44	-0.18	0.85	-0.02	-0.21	0.83
Gender	3.97	6.82	0.07	0.28	0.56	-4.12	5.41	-0.07	-0.76	0.45
Race	2.81	3.11	0.10	0.91	0.37	1.73	2.38	0.06	0.73	0.47
Custody	0.04	1.09	0.01	-0.04	0.97	-0.10	0.74	-0.01	-0.14	0.89
No. of Services	2.09	1.19	0.23	1.75	0.09	3.98	0.88	0.39	4.50	0.00002
	Note. $R^2 = 0.09$ ( $p = 0.09$ ).					Note. $R^2 = 0.18$ ( $p = 0.00002$ ).				

**Table 18: Summary of Hierarchical Linear Regression Analysis for Number of Services Utilized Predicting CBCL Internalizing Problems Score at Six-Month Follow-Up**

	Before Multiple Imputation					After Multiple Imputation				
Variable	<i>B</i>	SE <i>B</i>	$\beta$	<i>t</i>	Sig.	<i>B</i>	SE <i>B</i>	$\beta$	<i>t</i>	Sig.
Age	0.19	0.37	0.07	0.53	0.59	0.37	0.27	0.13	1.38	0.17
Gender	2.19	2.24	0.12	0.98	0.33	0.40	1.72	0.02	0.24	0.82
Race	1.34	1.02	0.17	1.31	0.19	1.22	0.78	0.14	1.61	0.11
Custody	0.12	0.36	0.04	0.34	0.73	-0.14	0.24	-0.05	-0.58	0.56
No. of Services	0.58	0.39	0.19	1.48	0.15	0.90	0.28	0.29	3.22	.002
	Note: $R^2 = 0.11$ ( $p = 0.15$ ).					Note: $R^2 = 0.14$ ( $p = 0.002$ ).				

**Table 19: Summary of Hierarchical Linear Regression Analysis for Number of Services Utilized Predicting CBCL Externalizing Problems Score at Six-Month Follow-Up**

	Before Multiple Imputation					After Multiple Imputation				
Variable	B	SE <i>B</i>	$\beta$	<i>t</i>	Sig.	B	SE <i>B</i>	$\beta$	<i>t</i>	Sig.
Age	-0.23	0.47	-0.07	-0.49	0.63	-0.36	0.36	-0.09	-1.00	0.32
Gender	1.71	2.85	0.08	0.59	0.55	-1.69	2.29	-0.07	-0.74	0.46
Race	-0.97	1.29	-0.10	-0.75	0.46	-0.96	1.00	-0.08	-0.95	0.34
Custody	-0.12	0.46	-0.03	-0.27	0.79	0.07	0.31	0.02	0.22	0.83
No. of Services	0.87	0.50	0.23	1.73	0.09	1.91	0.37	0.44	5.12	.000001
	Note: $R^2 = 0.07$ ( $p = 0.09$ ).					Note: $R^2 = 0.21$ ( $p = 0.000001$ ).				

*Hypothesis 3 Follow-Up Analyses.* Hypothesis 3 stated that, across wraparound facilitators, the level of services the child and family received would predict child outcomes from baseline to six-month and twelve-month follow-up and that this relationship would be mediated by fidelity to the wraparound process at six-month and twelve-month follow-up. Similar to Hypothesis 2, Hypothesis 3 was also reanalyzed using the total number of services utilized during the previous six months instead of using the level of services received as defined by the current study. Additionally, Hypothesis 3 was also reanalyzed using the fidelity to the wraparound process as measured by each individual informant's WFI Total score (wraparound facilitator, caregiver, and youth) at six-month and twelve-month follow-up. Again, see Hypothesis 2 Follow-Up Analyses for the rationale regarding these analyses. No significant effects were found.

In analyses examining whether the total number of services utilized was related to the child outcome measures, across wraparound facilitators, no significant effects were found before MI at any to the time points. After MI, the participant's total psychological symptoms (see Table 20), internalizing symptoms (see Table 21), and externalizing symptoms (see Table 22) were each significantly related to the total number of services utilized, from baseline to six-month and twelve-month follow-up but not to functional impairment.

Analyses examining whether the total number of services utilized was related to the level of adherence to the wraparound process from baseline to six-month and twelve-month follow-up, across wraparound facilitators, found no significant associations.

**Table 20: Summary of Linear Mixed Model for Number of Services Utilized Predicting CBCL Total Problem Score at Twelve-Month Follow-Up Compared to Baseline and Six-Month Follow-Up**

Variable	Before Multiple Imputation					After Multiple Imputation				
	<i>B</i>	<i>SE</i>	<i>df</i>	<i>t</i>	Sig.	<i>B</i>	<i>SE</i>	<i>df</i>	<i>t</i>	Sig.
Time	-6.00	65.74	56.01	-0.09	0.93	-10.64	58.40	12.81	-0.18	0.86
Age	-1.91	7.39	55.84	-0.26	0.79	0.29	6.87	19.03	0.04	0.97
Gender	-2.66	37.22	60.99	-0.07	0.94	-15.92	34.23	35.75	-0.47	0.65
Race	21.47	27.57	60.76	0.78	0.44	-2.78	17.91	23.11	-0.16	0.88
Custody	-6.06	7.52	60.79	-0.81	0.42	-8.51	5.85	27.29	-1.45	0.16
No. of Services Time *	-4.95	8.09	60.94	-0.61	0.54	9.36	3.35	70.43	2.79	0.01
No. of Services	3.51	3.82	60.68	0.92	0.36	-3.11	1.12	70.86	-2.78	0.01

**Table 21: Summary of Linear Mixed Model for Number of Services Utilized Predicting CBCL Internalizing Problems Score at Twelve-Month Follow-Up Compared to Baseline and Six-Month Follow-Up**

Variable	Before Multiple Imputation					After Multiple Imputation				
	<i>B</i>	<i>SE</i>	<i>df</i>	<i>t</i>	Sig.	<i>B</i>	<i>SE</i>	<i>df</i>	<i>t</i>	Sig.
Time	14.02	24.99	53.56	0.56	0.58	-.26	17.76	74.25	-0.01	0.99
Age	0.80	2.43	53.66	0.33	0.74	0.56	2.13	79.31	0.26	0.79
Gender	0.74	13.57	58.97	0.05	0.96	-5.56	10.86	78.55	-0.51	0.61
Race	13.85	9.46	57.99	1.46	0.19	-3.77	5.56	79.02	0.68	0.49
Custody	-1.79	2.75	59.75	-.65	0.15	-3.66	1.82	79.58	-2.01	0.05
No. of Services Time *	-2.71	2.71	59.97	-1.0	0.52	2.38	1.07	79.67	2.22	0.03
No. of Services	1.62	1.28	59.62	1.26	0.21	-0.79	0.36	79.74	-2.21	0.03

**Table 22: Summary of Linear Mixed Model for Number of Services Utilized Predicting CBCL Externalizing Problems Score at Twelve-Month Follow-Up Compared to Baseline and Six-Month Follow-Up**

	Before Multiple Imputation					After Multiple Imputation				
Variable	<i>B</i>	<i>SE</i>	<i>df</i>	<i>t</i>	Sig.	<i>B</i>	<i>SE</i>	<i>df</i>	<i>t</i>	Sig.
Time	1.89	26.69	50.55	0.07	0.94	9.87	23.67	66.86	0.42	0.68
Age	-0.41	2.99	49.88	-0.14	0.89	0.05	2.85	76.94	0.02	0.99
Gender	4.94	15.26	60.17	0.32	0.75	2.53	14.61	79.01	0.17	0.86
Race	2.34	11.29	59.47	0.21	0.84	-2.37	7.43	76.01	-0.32	0.75
Custody	-1.44	3.09	60.65	-0.47	0.64	-0.24	2.44	77.89	-0.09	0.92
No. of Services Time *	-1.08	3.32	60.83	-0.32	0.75	3.88	1.44	79.92	2.69	0.01
No. of Services	0.91	1.56	59.30	0.58	0.56	-1.29	0.48	79.97	-2.69	0.01

Repeating the above analysis but substituting the separate informant's WFI Total scores for the Overall Composite WFI Total score and by substituting the total number of services for the level of services variable, found no significant associations for the resource facilitator's fidelity rating, at six-month follow-up, before MI. After MI, the resource facilitator fidelity rating was significantly related to the level of services (see Table 23), but was not significantly related to the total number of services utilized. Only the level of services at six-month follow-up predicted the level of adherence to the wraparound process as reported by the wraparound facilitator. Neither the level of services nor the total number of services utilized predicted the level of adherence to the wraparound process as reported by the caregiver or youth.



**Table 23: Summary of Linear Mixed Model for Level of Services Predicting Resource Facilitator WFI Total Score at Twelve-Month Follow-Up Compared to Baseline and Six-Month Follow-Up**

Variable	Before Multiple Imputation					After Multiple Imputation				
	<i>B</i>	<i>SE</i>	<i>df</i>	<i>t</i>	Sig.	<i>B</i>	<i>SE</i>	<i>df</i>	<i>t</i>	Sig.
Time	-1.31	4.58	45.84	-0.29	0.78	1751.27	216.18	67.87	8.10	.00000000001
Age	0.69	1.28	19.42	0.54	0.59	133.06	24.47	67.63	5.44	0.0000008
Gender	-2.99	6.75	22.59	-0.44	0.66	-204.18	122.61	67.99	-1.67	0.10
Race	-3.29	4.46	16.42	-0.74	0.47	83.97	68.11	67.57	1.23	0.22
Custody	-0.35	0.99	29.08	-0.35	0.73	110.97	22.20	67.79	4.99	.000004
Level of Service Time *	0.92	1.07	19.93	0.86	0.40	110.18	19.42	67.57	5.67	0.0000003
Level of Service	-0.45	0.53	17.59	-0.85	0.41	-55.28	9.07	67.00	-6.09	0.00000006

## Discussion

### *Review of Study*

The purpose of the current study was to learn more about the relationships among service intensity, care coordination, and child outcomes. Specifically, when referring to care coordination, the approach to serving children and families called the wraparound process was the focus. The current study attempted to address two areas of need in the wraparound research base. One, the current study considered wraparound fidelity at both the provider level and at the child and family level. Two, the current study examined the relative roles of intensity of specific services and supports received and the quality of the wraparound process that plans and manages them in determining outcomes. These relationships were examined via the use of longitudinal data (collected at baseline, six-month, and twelve-month follow-up) and data from multiple sites implementing wraparound services that were demographically similar.

Contrary to prediction, the level of adherence to the wraparound process by wraparound facilitator was not found to predict child outcomes, such as functional impairment and psychological and behavioral symptoms, for each individual child. The level of adherence to the wraparound process as reported by the wraparound facilitators, caregivers, or youths did not predict child outcomes. However, considering the overall high level of fidelity scores and the limited variation in the scores across the three sites, it is not surprising that the level of adherence to the wraparound process did not predict child outcomes. Although there was considerable variability in the child outcome scores, there was little variance in the fidelity scores. Consequently, the general lack of

predictive power of adherence may be a direct consequence of restriction of range in the scores.

Contrary to prediction, a mediation model testing adherence as a mediator between the level of services the child and family received and child outcomes was not viable due to the null findings for Hypothesis 1. When the remainder of the model was tested, consistent with Hypothesis 2, externalizing symptoms were significantly related to the level of services. However, contrary to Hypothesis 2, higher levels of case management and therapy services were not related to higher levels of total psychological symptoms, internalizing symptoms, or functional impairment. Also contrary to Hypothesis 2, the level of services utilized was not related to the level of adherence to the wraparound process.

In order to examine whether the total number of services received was a better measure of service utilization than case management and therapy services, additional exploratory analyses were completed for Hypothesis 2 by substituting the number of total services utilized for the level of services utilized as defined by the total number of individual therapy appointments, family therapy appointments, group therapy appointments, and contacts with the case manager. At six-month follow-up, before MI, only functional impairment was significantly related to the number of services utilized. However, after MI, the number of services utilized predicted child outcomes measures related to psychological symptoms, both internalizing and externalizing symptoms, and functional impairment. The more services a child and family received predicted a greater number of psychological symptoms and greater functional impairment. These results

suggest that the total number of services utilized may be a better measure of service utilization than the level of services as defined by case management and therapy services. Although the level of services included the most frequently accessed services measured, the total number of services utilized was more highly correlated to child outcomes. One possible explanation for this is that the total number of services utilized better represents a breadth of treatment that case management and therapy services alone do not represent. While the majority of the children were receiving case management and therapy services, receiving a larger array of services may be a better predictor of positive outcomes.

In order to take into account the large amount of missing data at twelve-month follow-up, additional exploratory analyses were also completed for Hypothesis 2 by substituting each individual informant's scores (wraparound facilitator, caregiver, and youth) for the Overall Composite WFI Total score. The number of services utilized by families was not predictive of the wraparound facilitator's level of adherence to the wraparound process. Nor were level of adherence to the wraparound process as reported by the wraparound facilitators, caregivers, or youths significantly related to either the level of services or to the number of services utilized. Thus, adherence to the wraparound process was not related to the amount of services the child was receiving. In keeping with the basic tenet of wraparound, a better measure of services in future examinations of this relationship may be a measure that looks at both professional services and non-professional supports. While the MSSC does question the respondent about both professional services (i.e. therapy) and non-professional supports (i.e. recreational

activities), a service variable looking at a breakdown of these service and supports was not examined in the current study.

A longitudinal mediation model specifically examining the contribution of wraparound facilitators across time failed to support predictions that level of adherence to the wraparound process by wraparound facilitator would predict child outcomes from baseline to six-month and twelve-month follow-up, across each wraparound facilitator. None of the child outcomes measures were significantly related to the level of adherence to the wraparound process as reported by the wraparound facilitators, caregivers, or youths. However, after MI, across each wraparound facilitator, the number of services utilized was related to both internalizing and externalizing symptoms, but was not related to functional impairment over time. Specifically, the more services a child and family was receiving was related to higher levels of both internalizing and externalizing symptoms exhibited by the child. This is to be expected as it can be assumed that children exhibiting a higher level of psychological and behavioral symptoms would be receiving more services. However, contrary to what would be expected, children exhibiting a higher level of functional impairment were not necessarily receiving more services. One possible reason for this is that the services received were targeted towards the psychological and behavioral symptoms and not towards the child's level of functional impairment, though it may have been assumed that as the child's symptoms were addressed the functional impairment would decrease. Therefore, the number of services received would be related to the child's symptoms but not the child's functional impairment.

The number of services utilized by families was not predictive of the level of adherence to the wraparound process from baseline to six-month and twelve-month follow-up. However, after MI, the level of adherence to the wraparound process as reported by the wraparound facilitator was significantly related to the level of services as defined case management and therapy services but was not significantly related to the number of services utilized. Only the level of services utilized predicted the level of adherence to the wraparound process as reported by the wraparound facilitator. Neither the level of services nor the number of services utilized predicted the level of adherence to the wraparound process as reported by the caregiver or youth. One possible interpretation of these findings is that wraparound facilitators may have associated the amount of case management, therapy services and the total number of services as being indicative of providing high-quality wraparound, whereas caregivers and youths did not.

#### *Overview of Sites on Fidelity Measure*

It was hypothesized that there would be statistically significant differences between the three sites based on adherence to the principles of wraparound. When comparing the three sites, results indicated that overall adherence to the wraparound process at twelve-month follow-up for Site 2 was significantly lower than adherence for Site 1 and Site 3. When looking at the separate informant's reports of fidelity, it is apparent that the differences lie not with what the wraparound facilitators report, but with what the caregivers and youths report. Specifically, the three sites did not significantly differ on the wraparound facilitator's report of adherence, but the caregiver reports

differed at twelve-month follow-up and the youth reports differed at both six-month follow-up and twelve-month follow-up.

The lack of variability in fidelity between the three sites raises the question of whether or not the current study provided a good opportunity to answer the research questions. The current study focused on differences in the level of adherence to the wraparound process predicting child outcomes; however, given that lack of variability in the level of adherence, a relationship between the two would be difficult to find.

One encouraging finding involves the change over time in fidelity for the three sites. For both Site 1 and Site 3, adherence to the wraparound process was stable from six-month follow-up to twelve-month follow-up. This is encouraging, as it would be expected that the sites' adherence to the wraparound process would either increase or remain stable. However, for Site 2, only fidelity as reported by the wraparound facilitators and youths did not change over time. Fidelity as reported by the caregiver significantly decreased from six-month to twelve-month follow-up, indicating poorer adherence to the wraparound process over time for Site 2.

The interpretation of the change over time for the composite measure of adherence differs from the interpretation for the separate respondent's reports of adherence. For Site 1 and Site 3, there was not significant change over time for the Overall Composite WFI Total score; however for Site 2, the Overall Composite WFI Total score did significantly decrease from six-month to twelve-month follow-up. This finding may be a function of the sample and not a function of the change over time in fidelity. Because the six-month follow-up data were appropriate for the use of MI to

estimate missing values, there were fidelity scores for all three respondents leading to the Overall Composite WFI Total score. However, at twelve-month follow-up, there was a large amount of missing data in the fidelity scores; therefore, the Overall Composite WFI Total score was not comprised of scores from all three respondents. Consequently, the Overall Composite WFI Total scores at six-month and twelve-month follow-up are not directly comparable due to being comprised of different sets of respondents.

#### *Overview of Sites on Outcome Measures*

Change over time was assessed for each site for functional impairment and psychological symptoms.

Participants from Site 1 did not exhibit any statistically significant changes over time for internalizing or externalizing symptoms across the three time points. However there were significant decreases between each of the three time points for total psychological symptoms. Additionally, levels of functional impairment significantly decreased from baseline to six-month follow-up but not from six-month to twelve-month follow-up. However, for Site 1, the participant's functional impairment at twelve-month follow-up remained lower than at baseline.

Participants from Site 2 did not exhibit any statistically significant changes over time for any of the measures of psychological symptoms across the three time points. However, levels of functional impairment significantly decreased from baseline to six-month follow-up but not from six-month to twelve-month follow-up. Also, for Site 2, the participant's functional impairment at twelve-month follow-up remained lower than at baseline. The participants' number and frequency of total problems, internalizing



problems, and externalizing problems remained approximately the same throughout the twelve months of treatment meaning that treatment did not appear to have an effect on participant's number and frequency of behavior problems, though it did decrease functional impairment scores during the first six months of treatment.

Participants from Site 3 exhibited statistically significant decreases over time for total psychological symptoms and for externalizing symptoms between baseline and six-month follow-up. However, internalizing symptoms did not significantly decrease across the three time points. For Site 3, the levels of functional impairment significantly decreased from baseline to six-month follow-up but not from six-month to twelve-month follow-up. Showing a different pattern from other sites, however, the participant's functional impairment at twelve-month follow-up was approximately the same as at baseline.

It appears that, when looking at treatment gains during the first year of treatment, the majority of the treatment gains take place during the first six months. This was expected due in part to regression to the mean. The participant's high levels of functional impairment and psychological symptoms lead to the expectation that those levels would decrease the most at the beginning of treatment. One caveat to this is that there were no changes over time for internalizing symptoms for any of the sites. Internalizing symptoms include diagnoses such as depression and anxiety, which can be resistant to general forms of treatment and the lack of change may indicate this. There may also be a need for more emphasis within wraparound on evidence-based treatments focusing on these particular symptoms.

### *Exploratory Hypothesis*

The exploratory hypotheses examining individual growth models for the participants of the study based on the fidelity scores and child outcomes generated interesting findings. First, for the fidelity scores, although the overall fidelity significantly changed from baseline to six-month and twelve-month follow-up, the separate informant fidelity scores did not. This is not surprising, as the composite fidelity score is derived from averaging the separate informant's fidelity scores. At six-month follow-up, a fidelity score for each separate informant was available following MI. However, MI was not utilized at twelve-month follow-up due to the large amount of missing data. Therefore, the composite fidelity score was derived from whoever responded at that time point, and not necessarily from all three respondents. Therefore, the fact that the separate informant's fidelity scores did not change may be a more reliable finding as, for example, caregivers reports at six-month follow-up are compared to caregivers reports at twelve-month follow-up as opposed to comparing reports from all three respondents at six-month follow-up to wraparound facilitator's reports only at twelve-month follow-up.

For child outcome scores, both before and after MI, there were significant changes over time in that, across the individual children, functional impairment, total psychological symptoms, and externalizing symptoms decreased. This pattern of findings is encouraging in that there were positive outcomes across the individual children after receiving services. However, internalizing symptoms did not change over time before MI, but decreased after MI, indicating that there may not have been enough power to detect significant effects before MI for the internalizing symptoms.

This pattern of findings emphasizes a number of important points to consider when designing and implementing future studies. One, this pattern emphasizes the importance of examining a number of child outcome measures when designing and implementing a study. Simply examining either functional impairment or psychological symptoms in the absence of the other would yield different conclusions. Furthermore, it would be useful to include multiple measures of constructs in order to get a more reliable picture. Two, to take it a step further, these findings also emphasize the importance of examining a number of family outcome measures. It may be that the wraparound process does not affect child outcomes differently than traditional service delivery, but perhaps affects family outcomes more positively than traditional service delivery. For example, the wraparound process may lead to decreases in caregiver strain and family stress and to increases in family functioning and family resources. These family variables can be looked at in future analyses utilizing the current study's data as some of these variables are available in the original data set. Three, the current findings emphasize the importance of preventing missing data by carefully designing the study, and by utilizing MI when analyzing results, as not all missing data is preventable. Not only will reducing missing data decrease the likelihood that the missing data systematically confounds the results but also, the use of MI allows for increases in power that will aid in the statistical ability to detect significant findings when they are present.

### *Limitations*

There are three potential problems to the interpretation of the results. First, the three sites were not demographically similar. Across the three waves of data, there were

statistically significant differences between the three sites on age, gender, race, and custody status. In an attempt to minimize the impact of these demographic dissimilarities, age, gender, racial group, and custody status were used as covariates in each analysis. However, when comparing sites, these sample differences need to be considered.

Second, there was a large amount of attrition across the three waves of data collection. At baseline, 21% of the sample was missing data on at least one outcome measure. At six-month follow-up, 39% of the sample was missing data on at least one outcome measure and 7% was missing data on the fidelity measure. At twelve-month follow-up, 59% of the sample was missing data on at least one outcome measure and 69% was missing data on the fidelity measure.

Missing data was analyzed to determine if there were significant differences between those families with complete or missing data based on demographic variables and whether or not they had completed the outcome measures or the fidelity measure. The only significant difference between those families with complete or missing WFI data at six-month follow-up was based on Hispanic ethnicity. However, because there were only eight participants in the entire sample who were of Hispanic ethnicity, this finding is unlikely to be reliable due to the small cell size.

In an attempt to minimize the impact of attrition, MI was used for data collected at baseline and six-month follow-up. However, MI was not used for data collected at twelve-month follow-up due to high percentage of participant's who had missing data. This presents a problem in interpreting all analyses involving twelve-month follow-up data, specifically Hypothesis 3 and the exploratory analyses. The large amount of missing

data affected the power of the analyses, causing significant effects to be less likely to be detected even if present. Additionally, the pattern of data must be considered tentative. Thus, findings involving the twelve-month follow-up data should be interpreted with particular caution. The large amount of missing data at twelve-months led to a small number of participants with all three time points available for analysis.

In terms of the overall adherence to the wraparound process, the large amount of participant's who are missing the twelve-month follow-up fidelity scores indicates that the score must be interpreted with caution as well. Because the Overall Composite WFI Total score is comprised of the mean of all of the informants (wraparound facilitator, caregiver, and youth) who are available, directly comparing the scores at six-month follow-up to those at twelve-month follow-up is hindered. For example, an Overall Composite WFI Total score at six-month follow-up may be comprised of the wraparound facilitator, caregiver, and youth's scores. However, for that same family, the Overall Composite WFI Total score at twelve-month follow-up may be comprised only of the wraparound facilitator's score with the caregiver and youth scores missing. The two scores, therefore, are comprised from different informants and thus must be interpreted with caution. The current study attempted to address this limitation by also analyzing the separate informant's scores in analyses that looked at the Overall Composite WFI Total score. This phenomenon is evident in findings from those analyses.

Third, the participant's levels of psychological symptoms and functional impairment significantly differed across the three sites. Overall, participants from Site 3 were higher functioning and had fewer psychological symptoms than participants from

Sites 1 and 2. It may be that participants from Site 3 are not directly comparable with participants from Sites 1 and 2.

There were also some important general limitations to the current study, which affect the generalizability of the findings. First, these data came from only three sites in the United States. A study using additional sites would be more representative of the population. Second, the way service utilization was measured does not necessarily reflect the number and type of services the caregiver wanted. The caregiver may have wanted more services and therefore attended all of the services offered within their respective service delivery systems. Many community mental health agencies do not have the number of professional staff to serve every child the way the child's needs require, even though this is a basic tenet of the principles of wraparound. This problem leads to the third limitation. Wraparound is a philosophy, which must operate within the constraints of the service delivery system.

The organizational context leads to an important caveat when evaluating a study on services. Program and organizational characteristics have been emphasized equally important as other provider and service characteristics (Schoenwald & Hoagwood, 2001). The current study did not measure the program or organizational characteristics of the sites, due in part to the need for investigating the role of individual provider's adherence to the wraparound principles. A parallel strain of research is currently underway focusing on these variables (Bruns, Leverentz-Brady, Suter, & Hoagwood, 2006; Walker et al., 2003).

### *Implications and Future Questions*

The goal of the current study was to learn more about the relationship between service intensity, care coordination, and child outcomes. This goal is critical at this time in the development of the wraparound research base as previous studies have not attempted to concurrently consider both the provider level and the child and family level. Additionally, previous studies have not attempted to determine the relative roles of both the intensity of specific services and supports received and the quality of the wraparound process in determining outcomes. The current study attempted to examine these relationships via the use of longitudinal data collected from multiple comparable sites.

Contrary to Hypothesis 1, the level of adherence to the wraparound process by wraparound facilitator did not predict child outcomes, such as functional impairment and symptomatology. Contrary to Hypotheses 2, the wraparound process was not a mediator of the relationship between services received and child outcomes either cross-sectionally or over time. However, the exploratory analyses indicated that although fidelity rated by multiple informants significantly changed from baseline to six-month and twelve-month follow-up, the separate informant fidelity scores did not. For the child outcomes scores, across the individual children, their functional impairment, total psychological symptoms, and externalizing symptoms decreased from baseline to six-month and twelve-month follow-up. However, the internalizing symptoms decreased across the time points only after statistical handling of missing data with MI.

Overall, none of the hypotheses from the current study were supported. There are a number of possible reasons why the results differed from what was expected.

One, wraparound may not have been implemented well in any of the three sites assessed in the current study. In other words, the services provided may not have adequately reflected the wraparound process. While the WFI is supposed to measure adherence to the wraparound process, previous studies have found low variability in fidelity scores in that the majority of sites who have utilized the WFI have scored similarly to the three sites in the current study. It may be that the WFI is subject to halo effects and the overall method of assessing fidelity should be reconsidered. At the time of this study, there was no national standard for how to apply the wraparound process, though a national standard for wraparound is currently being developed and the WFI is being revised to align with a national standard. Researchers and service providers are working together or in joint capacity to develop a national standard that will make it easier for providers to offer high-quality wraparound. If wraparound was not being implemented well in these sites, then a relationship between service intensity, care coordination, and child outcomes would be difficult to detect because one of the key components would be missing.

Whether or not wraparound is implemented as it is intended also is a key question in examining cost-effectiveness. Cost-effectiveness is an important component in how services become adopted by organizations and bureaucracies in that the most likely services adopted will lead to the best possible outcomes at the most financially feasible cost. Although wraparound has been shown in numerous studies to be more cost-effective than out-of-home placements and long-term residential care (Bruns et al., 1995; Hyde et al., 1995; Kamradt, 2000; Johnson, 1998), wraparound that is not being implemented as it



is intended can be harmful to the field. Inadequately implemented services lead to inaccurate data about both wraparound's financial feasibility and child and family outcomes. A national standard of wraparound is crucial to ensuring that organizations are implementing wraparound as it is intended. This is not to say that any organization is deliberately not implementing wraparound as it is intended, rather that because wraparound is a philosophy of care; there is no easily defined standard.

If wraparound was not being implemented as it was intended, then the next question is why the fidelity scores were as high as they were. One possible explanation for this is that the WFI is not sensitive to differences in wraparound implementation. This explanation is supported by findings from previous studies regarding the lack of variation in WFI scores. The majority of sites that have utilized the WFI have scored high with very small differences between them. This phenomenon was found in the current study as well as there was very little variation between the three sites in the WFI scores.

Additionally, the current study was not able to obtain data from all three respondents for the vast majority of the participants; only 35 out of the 122 families interviewed had data from all three respondents. The remainders of the interviews were conducted with two out of the three possible respondents (42 families) or with one respondent only (45 families). This may have affected the findings in that wraparound facilitators contributed data for 99 of the 122 families and both previous studies and the current study have shown that wraparound facilitators consistently give higher scores on the WFI than caregivers and youth. While an attempt was made to correct this problem at six-month follow-up through the use of MI, MI was not used for the data at twelve-month

follow-up because of the large amount of missing data. Wraparound facilitators may not be the most appropriate respondent for measuring how well sites are adhering to the wraparound process.

This measurement problem can be remedied in future studies by also utilizing additional respondents and through the use of additional fidelity measures. For example, the Wraparound Observation Form (WOF) assesses fidelity to wraparound process through observing the wraparound team process (Epstein et al., 1998). Subsequent to this study the WFI-3 was revised to include a Team Observation Form (TOM) and the use of a team member informant, in addition to revisions to the caregiver, youth, and wraparound facilitator forms. It is believed that these changes will lead to higher sensitivity in detecting differences in adherence to the wraparound process therefore generating greater variance and increased validity for fidelity scores.

Turning next to the outcomes measures used in this study, the child outcomes measures used in this study are likely not the only outcomes affected by the wraparound process. Although the CBCL and CAFAS are frequently used outcome measures that would be expected to be affected by the wraparound process, there may be outcomes other than symptomatology and functional impairment that should be considered. For example, data on caregiver strain may show a reduction related to adherence to the wraparound process. As a family receives more formal and informal support and more coordination of services, their level of strain may decline. There may also be other family variables, such as family stress, family functioning, and family resources that would show improvement as a function of adherence to the wraparound process, many of which

may be as important to the family's functioning as a whole as are symptomatology and functional impairment. Future studies utilizing a larger variety of outcome measures for and those targeting the family context, as opposed to using only outcome measures for the individual child, would be useful in examining this.

Three, the definition of service utilization for the current study may not be appropriately sensitive to wraparound fidelity. In the current study, service utilization defined as the amount of case management and therapy services was not related to variables of interest. In contrast, service utilization defined as the total number of services was related to outcomes. When looking at the findings across types of services implemented, Site 1 appears to have a better mix of services utilized than Sites 2 and 3. It may be that defining service utilization as a mixture of formal services and informal supports will prove to be better measure of services than either level of services or number of services utilized. Additionally, with the wraparound process, whether services utilized are appropriate and adequate to fit the families' needs may be more important than the amount of services received. Appropriate services would include services tailored to fit the child and families specific needs. The number of services utilized in each site may not be indicative of individualized and community-based services but may be an indicator of a number of problems with the service delivery system. For example, it may be that there is a restricted service array available for the site or that there are insurance or other reimbursement problems unique to a site causing a fewer number of services to be offered. Although conjectures can be made as to the findings on the number of services utilized, from the current data, it is not possible to determine which if

any are true. Future analysis of the current study's data could help decipher this issue by examining the questions on the MSSC pertaining to the family's satisfaction with each service. Specifically, on this measure, for each services asked about, the family is also asked how satisfied they were with the service. However, this set of questions does not give information on whether other services would be more helpful or a better fit to the child and family's needs. In this instance, a qualitative component to the data collection in addition to the quantitative measures may aid in future understanding of this potential issue.

Additionally, relationships between wraparound and positive child outcomes may not have been detected due to poor quality of services offered at each site. Although the WFI purports to give an indication of whether sites are implementing high quality wraparound, it does not give any indication of whether the services being implemented are satisfactory. Future studies could incorporate a quality improvement measure for services as part of the study. Conjectures could be made from the current study's data in whether families receiving services were satisfied with those services by looking at the questions regarding satisfaction with services. It may be useful for a future analysis of the current data to include that information.

Four, the attrition in the current study may have systematically biased the results. Although MI was used for baseline and six-month follow-up data in an attempt to deal with the attrition, it was not used for the twelve-month follow-up data because of the large amount of missing data. There may be something unique about the families with complete data that is not readily apparent from the data analyzed in the current study but

is affecting the results in some way. Future analysis of other variables collected with the current data set that were not included in the current study may lead to conclusions regarding the nature of the missing data.

Additionally, as discussed previously, the large amount of missing data at twelve-month follow-up hinders interpretation of the overall adherence to the wraparound process at that wave of data collection and the direct comparison of the overall adherence at six-month and twelve-month follow-up. The current study also examined the separate respondent's fidelity ratings in an attempt to lessen the impact. While the Overall Composite WFI Total score is a useful composite score when examining fidelity to the wraparound process, it should not be used in isolation but rather in conjunction with the separate respondent's scores in order to gather the full picture.

Five, the statistical power of the current study was compromised by attrition and missing data. That power may have been affected by the attrition rate is suggested by the findings before and after MI. There were a number of results that were not statistically significant before MI was conducted and were significant after, leading to the conclusion that the power of the analyses was increased by the larger sample size after MI. Though MI is a good technique for increasing power and dealing with attrition, it was not applied to the twelve-month follow-up data in the current study because of the large attrition rate, which hinders the interpretation of all analyses including twelve-month follow-up data.

### *Conclusion*

One possible implication of the findings of this study is that high-quality wraparound is not resulting in more positive child outcomes such as decreased

psychological symptoms and functional impairment. Ensuring high fidelity to the core principles of wraparound has been found to be important in achieving positive outcomes in a previous study (Bruns et al., 2003), however this study does not confirm this relationship. More focused studies are needed to see whether ensuring high fidelity to the wraparound process is important in achieving positive outcomes.

Even if high-quality wraparound does not result in more positive child outcomes, it does not mean that high-quality wraparound is not important. In fact, wraparound began achieving prominence through the overwhelming support of families who felt that the process was a much more family-friendly way of providing services than traditional service delivery. If the child outcomes achieved through high-quality wraparound are comparable to traditional service delivery, the family-friendliness of the wraparound process may be in and of itself enough to advocate for its utilization.

It also does not mean that high-quality wraparound is ineffective. There may be variables other than the children's functioning and psychological symptoms that improve with wraparound. As discussed before, family variables such as family functioning, family stress, family resources, and caregiver strain may each be positively affected by the wraparound process above and beyond the effect of traditional service delivery.

There are many possible reasons for why high quality wraparound in the current study did not result in more positive child outcomes. As previously discussed, the large amount of missing data likely affected the findings. Also, as previously discussed, there may be problems with the way services were defined for the current study and/or

problems in the quality and variety of services provided. Finally, it may be that the sites were not adhering to high quality wraparound and the WFI was not sensitive to this.

A broader implication for future research based on this overall finding is there is a clear need to investigate care coordination models such as wraparound in conjunction with evidence-based practices. If the wraparound process in and of itself does not lead to significantly better positive outcomes, which is unclear from the current study, it may be that evidence-based practices, which have been shown to lead to increased positive outcomes, should be used in conjunction with the wraparound process to ensure full family engagement and the highest probability of maintaining treatment gains. Wraparound and evidence-based practices are not on opposite ends of the spectrum, but can be integrated together to provide the best possible services for children and families.

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## **Appendices**

## *Appendix I: Phases and Activities of the Wraparound Process*

The table below outlines the proposed phases and activities that must be included in a full wraparound process. This document focuses on *what* needs to happen; however, *how* the work is accomplished is equally important. Merely accomplishing the tasks is insufficient unless this work is done in a manner consistent with ten principles of wraparound. Future work from the National Wraparound Initiative will focus on providing more detailed information about team member skills that are necessary for the wraparound process, as well as descriptions of specific procedures, templates, and other tools that can be used to complete the various activities.

Some notes:

- From the way the activities below are worded, a *facilitator* is responsible for guiding, motivating, or undertaking the various activities. This is not meant to imply that a single person must facilitate all of the activities, and we have not tried to specify exactly who should be responsible for each activity. The various activities may be split up among a number of different people. For example, on many teams, a parent partner or advocate takes responsibility for many of the activities associated with family and youth engagement, while a care coordinator is responsible for many of the other activities. On some teams, a care coordinator takes on most of the facilitation activities with specific tasks or responsibilities taken on by a parent, youth, and/or other team members.

- The *families* participating in wraparound, like American families more generally, are diverse in terms of their structure and composition. Families may be a single biological or adoptive parent and child or youth, or may include grandparents and other extended family members as part of the central family group. If the court has assigned custody of the child or youth to some public agency (e.g., child protective services or juvenile justice), the caregiver in the permanency setting and/or another person designated by that agency (e.g. foster parent, social worker, probation officer) takes on some or all of the roles and responsibilities of a parent for that child and shares in selecting the team and prioritizing objectives and options. As youth become more mature and independent, they begin to make more of their own decisions, including inviting members to join the team and controlling aspects of the wraparound process.
- The use of *numbering for the phases and activities* described below is not meant to imply that the activities must invariably be carried out in a specific order, or that one activity or phase must be finished before another can be started. Instead, the numbering and ordering is meant to convey an overall flow of activity and attention. For example, focus on transition activities is most apparent during the latter portions of the wraparound process; however, attention to transition issues begins with the earliest activities.

MAJOR TASKS/Goals	ACTIVITIES	NOTES
<p><b>PHASE 1: Engagement and team preparation</b></p> <p>During this phase, the groundwork for trust and shared vision among the family and wraparound team members is established, so people are prepared to come to meetings and collaborate. This phase, particularly through the initial conversations about strengths, needs, and culture, sets the tone for teamwork and team interactions that are consistent with the wraparound principles. The activities of this phase should be completed relatively quickly (within 1-2 weeks if possible), so that the team can begin meeting and establish ownership of the process as quickly as possible.</p>		
<p><b>1. 1. Orient the family</b> GOAL: To orient the family to the wraparound process.</p>	<p><b>1.1 a. Orient the family and youth to wraparound</b> In face-to-face conversations, the facilitator explains the wraparound philosophy and process to family members and describes who will be involved and the nature of family and youth/child participation. Facilitator answers questions and addresses concerns. Facilitator describes alternatives to wraparound and asks family and youth if they choose to participate in wraparound. Facilitator describes options and offers supports for family and youth roles/partnership on teams (e.g. family/youth may want coaching so they can feel more comfortable/effective in partnering with other team members).</p>	<p>This orientation to wraparound should be brief and clear, and should avoid the use of jargon, so as not to overwhelm family members. At this stage, the focus is on providing enough information so that the family and youth can make an informed choice regarding participation in the wraparound process. For some families, these alternatives may be very limited and/or non-participation may bring negative consequences (as when wraparound is court ordered); however, this does not prevent families/youth from making an informed choice to participate based on knowledge of the alternatives and/or the consequences of non-participation.</p>
	<p><b>1.1 b. Address legal and ethical issues</b> Facilitator reviews all consent and release forms with the family and youth, answers questions, and explains options and their consequences. Facilitator discusses relevant legal and ethical issues (e.g. mandatory reporting), informs family of their rights, and obtains necessary consents and release forms before the first team meeting.</p>	<p>Ethical and legal considerations will also need to be reviewed with the entire team as described in phase 2.</p>

MAJOR TASKS/Goals	ACTIVITIES	NOTES
<p><b>1.2. Stabilize crises</b> GOAL: To address pressing needs and concerns so that family and team can give their attention to the wraparound process.</p>	<p><b>1.2 a. Ask family and youth about immediate crisis concerns</b> Facilitator elicits information from the family and youth about immediate safety issues, current crises, or crises that they anticipate might happen in the very near future. These may include crises stemming from a lack of basic needs (e.g., food, shelter).</p>	<p>The goal of this activity is to quickly address the most pressing concerns. The whole team engages in proactive and future-oriented crisis/safety planning during phase 2. As with other activities in this phase, the goal is to do no more than necessary prior to convening the team, so that the facilitator does not come to be viewed as the primary service provider and so that team as a whole can feel ownership for the plan and the process.</p>
	<p><b>1.2 b. Elicit information from agency representatives and potential team members about immediate crises or potential crises</b> Facilitator elicits information from the referring source and other knowledgeable people about pressing crisis and safety concerns.</p>	<p>Information about previous crises and their resolution can be useful in planning a response in 1.2.c.</p>
	<p><b>1.2 c. If immediate response is necessary, formulate a response for immediate stabilization</b> Facilitator and family reach agreement about whether concerns require immediate attention and, if so, work to formulate a response that will provide immediate relief while also allowing the process of team building to move ahead.</p>	<p>This response should describe clear, specific steps to accomplish stabilization.</p>

MAJOR TASKS/Goals	ACTIVITIES	NOTES
<p><b>1.3. Facilitate conversations with family and youth/child</b> GOAL: To explore individual and family strengths, needs, culture, and vision and to use these to develop a document that will serve as the starting point for planning.</p>	<p><b>1.3 a. Explore strengths, needs, culture, and vision with child/youth and family.</b> Facilitator meets with the youth/child and family to hear their story; gather their perspective on their individual and collective strengths, needs, elements of culture, and long term goals or vision; and learn about natural and formal supports. Facilitator helps family identify potential team members and asks family to talk about needs and preferences for meeting arrangements (location, time, supports needed such as child care, translation).</p>	<p>This activity is used to develop information that will be presented to and augmented by the team in phase 2. Family members should be encouraged to consider these topics in a broad</p>
	<p><b>1.3 b. Facilitator prepares a summary document</b> Using the information from the initial conversations with family members, the facilitator prepares a strengths-based document that summarizes key information about individual family member strengths and strengths of the family unit, as well as needs, culture, and vision. The family then reviews and approves the summary.</p>	
<p><b>1.4. Engage other team members</b> GOAL: To gain the participation of team members who care about and can aid the youth/child and family, and to set the stage for their active and collaborative participation on the team in a manner consistent with the wraparound principles</p>	<p><b>1.4 a. Solicit participation/orient team members</b> Facilitator, together with family members if they so choose, approaches potential team members identified by the youth and family. Facilitator describes the wraparound process and clarifies the potential role and responsibilities of this person on the team. Facilitator asks the potential team members if they will participate. If so, facilitator talks with them briefly to learn their perspectives on the family's strengths and needs, and to learn about their needs and preferences for meeting.</p>	<p>The youth and/or family may choose to invite potential team members themselves and/or to participate in this activity alongside the facilitator. It is important, however, not to burden family members by establishing (even inadvertently) the expectation that they will be primarily responsible for recruiting and orienting team members.</p>

MAJOR TASKS/Goals	ACTIVITIES	NOTES
<p><b>1.5. Make necessary meeting arrangements</b>  GOAL: To ensure that the wraparound team is prepared to begin an effective team process, and that mandated procedures are undertaken.</p>	<p><b>1.5 a. Arrange meeting logistics</b>  Facilitator integrates information gathered from all sources to arrange meeting time and location and to assure the availability of necessary supports or adaptations such as translators or child care. Meeting time and location should be accessible and comfortable, especially for the family but also for other team members. Facilitator prepares materials—including the document summarizing family members’ individual and collective strengths, and their needs, culture, and vision-- to be distributed to team members.</p>	



**PHASE 2: Initial plan development**

During this phase, team trust and mutual respect are built while creating an initial plan of care using a high quality planning process that reflects the wraparound principles. In particular, youth and family should feel, during this phase, that they are heard, that the needs chosen are ones they want to work on, and that the options chosen have a reasonable chance of helping them meet these needs. This phase should be completed during one or two meetings that take place within 1-2 weeks, a rapid time frame intended to promote team cohesion and shared responsibility toward achieving the team's *mission* or overarching goal.

**2.1. Develop an initial plan of care**

GOAL: To create an initial plan of care using a high-quality team process that elicits multiple perspectives and builds trust and shared vision among team members, while also being consistent with the wraparound principles

**2.1 a. Determine ground rules**

Facilitator guides team in a discussion of basic ground rules, elicits additional ground rules important to team members, and facilitates discussion of how these will operate during team meetings. At a minimum, this discussion should address legal and ethical issues—including confidentiality, mandatory reporting, and other legal requirements—and how to create a safe and blame-free environment for youth/family and all team members. Ground rules are recorded in team documentation and distributed to members.

In this activity, the team members define their collective expectations for team interaction and collaboration. These expectations, as written into the ground rules, should reflect the principles of wraparound. For example, the principles stress that interactions should promote family and youth voice and choice and should reflect a strengths orientation. The principles also stress that important decisions are made within the team.

**2.1 b. Describe and document strengths**

Facilitator presents strengths from the summary document prepared during phase 1, and elicits feedback and additional strengths, including strengths of team members and community.

While strengths are highlighted during this activity, the wraparound process features a strengths orientation throughout.

**2.1 c. Create team mission**

Facilitator reviews youth and family's vision and leads team in setting a *team mission*, introducing idea that this is the overarching goal that will guide the team through phases and, ultimately, through transition from formal wraparound.

The team mission is the collaboratively set, long term goal that provides a one or two sentence summary of what the team is working towards.

	<p><b>2.1 d. Describe and prioritize needs/goals</b></p> <p>Facilitator guides the team in reviewing needs and adding to list. The facilitator then guides the team in prioritizing a small number of needs that the youth, family, and team want to work on first, and that they feel will help the team achieve the mission.</p> <p>Facilitator guides team in discussing a specific goal, outcome, or indicator that will represent success in meeting each need that the team has chosen to work on; how the outcome will be assessed; and with what frequency.</p>	<p>The elicitation and prioritization of needs is often viewed as one of the most crucial and difficult activities of the wraparound process. The team must ensure that needs are considered broadly, and that the prioritization of needs reflects youth and family views about what is most important. Needs are not services but rather broader statements related to the underlying conditions that, if addressed, will lead to the accomplishment of the mission.</p>
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	<p><b>2.1 e. Select strategies and assign action steps</b></p> <p>Facilitator guides the team in a process to think in a creative and open-ended manner about strategies for meeting needs and achieving outcomes. The facilitator uses techniques for generating multiple options, which are then evaluated by considering the extent to which they are likely to be effective in helping reach the goal, outcome, or indicator associated with the need; the extent to which they are community based, the extent to which they build on/incorporate strengths; and the extent to which they are consistent with family culture and values. When evaluating more formal service and support options, facilitator aids team in acquiring information about/considering the evidence base for relevant options. Team assigns responsibility for undertaking action steps associated with implementing the selected strategies within a particular time frame.</p>	<p>This activity emphasizes creative problem solving, usually through brainstorming or other techniques, with the team considering the full range of available resources as they come up with options for strategies to meet needs and achieve outcomes. Importantly this includes generating strategy options that extend beyond formal services and reach families through other avenues and time frames. These are frequently developed and provided by the youth and family and people representing their interpersonal and community connections.</p> <p>Action steps are the separate small activities that are needed to put a strategy into place, for example, making a phone call, transporting a child, doing some paperwork, finding out more information, attending a support meeting, arranging an appointment. While all team members will not necessarily participate at the same level, all team members should be responsible for carrying out action steps. Care should be taken to ensure that individual team members, particularly the youth and family, are not overtaxed, by the number of action steps they are assigned.</p>
<p><b>2.2. Develop crisis/safety plan</b></p> <p>GOAL: To identify potential problems and crises, prioritize according to seriousness &amp; likelihood of occurrence, and</p>	<p><b>2.2 a. Determine potential serious risks</b></p> <p>Facilitator guides the team in a discussion of how to maintain the safety of all family members and things that could potentially go wrong, followed by a process of prioritization based on seriousness and likelihood of occurrence.</p>	<p>Past crises, and the outcomes of strategies used to manage them, are often an important source of information in current crisis/safety planning.</p>

create an effective and well-specified crisis <i>prevention and response</i> plan that is consistent with the wraparound principles.	<b>2.2 b. Create crisis/safety plan</b> In order of priority, the facilitator guides team in discussion of each serious risk identified. The discussion includes safety needs or concerns and potential crisis situations, including antecedents and associated strategies for preventing each potential type of crisis, as well as potential responses for each type of crisis, should it occur. Specific roles and responsibilities are created for team members. This information is documented in a written plan.	One potential difficulty with this activity is the identification of a large number of crises can mean that the crisis/safety plan “takes over” from the wraparound plan. The team thus needs to balance the need to address all risks that are deemed serious with the need to maintain focus on the larger wraparound plan.
<b>2.3. Complete necessary documentation and logistics</b>	<b>2.3 a. Complete documentation and logistics</b> Facilitator guides team in setting meeting schedule and determining means of contacting team members and distributing documentation to team members	

**PHASE 3: Implementation**

During this phase, the initial wraparound plan is implemented, progress and successes are continually reviewed, and changes are made to the plan and then implemented, all while maintaining or building team cohesiveness and mutual respect. The activities of this phase are repeated until the team's mission is achieved and formal wraparound is no longer needed.

**3.1. Implement the wraparound plan**

GOAL: To implement the initial plan of care, monitoring completion of action steps and strategies and their success in meeting need and achieving outcomes in a manner consistent with the wraparound principles

**3.1 a. Implement action steps for each strategy**

For each strategy in the wraparound plan, team members undertake action steps for which they are responsible. Facilitator aids completion of action steps by checking in and following up with team members; educating providers and other system and community representatives about wraparound as needed; and identifying and obtaining necessary resources.

The level of need for educating providers and other system and community representatives about wraparound varies considerably from one community to another. Where communities are new to the type of collaboration required by wraparound, getting provider "buy in" can be very difficult and time consuming for facilitators. Agencies implementing wraparound should be aware of these demands and be prepared to devote sufficient time, resources, and support to this need.

**3.1 b. Track progress on action steps**

Team monitors progress on the action steps for each strategy in the plan, tracking information about the timeliness of completion of responsibilities assigned to each team member, fidelity to the plan, and the completion of the requirements of any particular intervention.

Using the timelines associated with the action steps, the team tracks progress. When steps do not occur, teams can profit from examining the reasons why not. For example, teams may find that the person responsible needs additional support or resources to carry out the action step, or, alternatively, that different actions are necessary.

**3.1 c. Evaluate success of strategies**

Using the outcomes/indicators associated with each need, the facilitator guides the team in evaluating whether selected strategies are helping team meet the youth and family's needs.

Evaluation should happen at regular intervals. Exactly how frequently may be determined by program policies and/or the nature of the needs/goals. The process of evaluation should also help the team maintain focus on the "big picture" defined by the team's mission: Are these strategies, by meeting needs, helping achieve the mission?

	<p><b>3.1. d. Celebrate successes</b></p> <p>The facilitator encourages the team to acknowledge and celebrate successes, e.g. when progress has been made on action steps, when outcomes or indicators of success have been achieved, or when positive events or achievements occur.</p>	<p>Acknowledging success is one way of maintaining a focus on the strengths and capacity of the team and its members. Successes do not have to be “big”, nor do they necessarily have to result directly from the team plan. Some teams make recognition of “what’s gone right” a part of each meeting.</p>
<p><b>3.2. Revisit and update the plan</b></p> <p>GOAL: To use a high quality team process to ensure that the wraparound plan is continually revisited and updated to respond to the successes of initial strategies and the need for new strategies.</p>	<p><b>3.2. a. Consider new strategies as necessary</b></p> <p>When the team determines that strategies for meeting needs are not working, or when new needs are prioritized, the facilitator guides the team in a process of considering new strategies and action steps using the process described in 2.1.e.</p>	<p>Revising of the plan takes place in the context of the needs identified in 2.1.d. Since the needs are in turn connected to the mission, the mission helps to guide evaluation and plan revisions.</p>
<p><b>3.3. Maintain/build team cohesiveness and trust</b></p> <p>GOAL: To maintain awareness of team members’ satisfaction with and “buy-in” to the process, and take steps to maintain or build team cohesiveness and trust.</p>	<p><b>3.3 a. Maintain awareness of team members’ satisfaction and “buy-in”</b></p> <p>Facilitator makes use of available information (e.g. informal chats, team feedback, surveys—if available) to assess team members’ satisfaction with and commitment to the team process and plan, and shares this information with the team as appropriate. Facilitator welcomes and orients new team members who may be added to the team as the process unfolds.</p>	<p>Many teams maintain formal or informal processes for addressing team member engagement or “buy in”, e.g. periodic surveys or an end-of-meeting wrap-up activity. This focus on assessing the process of teamwork should not, of course, eclipse the overall evaluation that is keyed to meeting the needs and achieving the team mission.</p>

	<p><b>3.3 b. Address issues of team cohesiveness and trust</b></p> <p>Making use of available information, facilitator helps team maintain cohesiveness and satisfaction (e.g. by continually educating team members--including new team members--about wraparound principles and activities, and/or by guiding team in procedures to understand and manage disagreement, conflict, or dissatisfaction).</p>	<p>Teams will vary in the extent to which issues of cohesiveness and trust arise. Often, difficulties in this area arise from one or more team members' perceptions that the team's work—and/or the overall mission or needs being currently addressed—is not addressing the “real” needs. This points to the importance of careful work in deriving the needs and mission in the first place, since shared goals are essential to maintaining team cohesiveness over time.</p>
<p><b>3.4. Complete necessary documentation and logistics</b></p>	<p><b>3.4 a. Complete documentation and logistics</b></p> <p>Facilitator maintains/updates the plan and maintains and distributes meeting minutes. Team documentation should record completion of action steps, team attendance, use of formal and informal services and supports, and expenditures. Facilitator documents results of reviews of progress/successes, and changes to the team and plan. Facilitator guides team in revising meeting logistics as necessary and distributes documentation to team members.</p>	<p>Team documentation should be kept current and updated and be distributed to/available to all team members in a timely fashion.</p>

<p><b>PHASE 4: Transition</b>  During this phase, plans are made for a purposeful transition out of formal wraparound to a mix of formal and natural supports in the community (and, if appropriate, to services and supports in the adult system). The focus on transition is continual during the wraparound process, and the preparation for transition is apparent even during the initial engagement activities.</p>		
<p><b>4.1. Plan for cessation of formal wraparound</b>  GOAL: To plan a purposeful transition out of formal wraparound in a way that is consistent with the wraparound principles, and that supports the youth and family in maintaining the positive outcomes achieved in the wraparound process.</p>	<p><b>4.1 a. Create a transition plan</b>  Facilitator guides the team in focusing on the transition from wraparound, reviewing strengths and needs and identifying services and supports to meet needs that will persist past formal wraparound.</p>	<p>Preparation for transition begins early in the wraparound process, but intensifies as team meets needs and moves towards achieving the mission. While formal supports and services may be needed post-transition, the team is attentive to the need for developing a sustainable system of supports that is not dependent on formal wraparound. Teams may decide to continue wraparound--or a variation of wraparound--even after it is no longer being provided as a formal service.</p>
	<p><b>4.1 b. Create a post-transition crisis management plan</b>  Facilitator guides the team in creating post-wraparound crisis management plan, including action steps, specific responsibilities, and communication protocols. Planning may include rehearsing responses to crises and creating linkage to post-wraparound crisis resources.</p>	<p>At this point in transition, youth and family members, together with their continuing supports, should have acquired skills and knowledge in how to manage crises. Post-transition crisis management planning should acknowledge and capitalize on this increased knowledge and strengthened support system. This activity will likely include identification of access points and entitlements for formal services that may be used following formal wraparound.</p>
	<p><b>4.1 c. Modify wraparound process to reflect transition</b>  New members may be added to the team to reflect identified post-transition strategies, services, and supports. The team discusses responses to potential</p>	<p>Teams may continue to meet using a wraparound process (or other process or format) even after formal wraparound has ended. Should teamwork continue, family members and youth, or other supports, will likely take on some or all of the</p>



	future situations, including crises, and negotiates the nature of each team member's post-wraparound participation with the team/family. Formal wraparound team meetings reduce frequency and ultimately cease.	facilitation/coordination activities.
<b>4.2. Create a “commencement”</b> GOAL: To ensure that the cessation of formal wraparound is conducted in a way that celebrates successes and frames transition proactively and positively	<b>4.2 a. Document the team's work</b> Facilitator guides team in creating a document that describes the strengths of the youth/child, family, and team members, and lessons learned about strategies that worked well and those that did not work so well. Team participates in preparing/reviewing necessary final reports (e.g. to court or participating providers, where necessary)	This creates a package of information that can be useful in the future.
	<b>4.2 b. Celebrate success</b> Facilitator encourages team to create and/or participate in a culturally appropriate “commencement” celebration that is meaningful to the youth/child, family, and team, and that recognizes their accomplishments.	This activity may be considered optional. Youth/child and family should feel that they are ready to transition from formal wraparound, and it is important that “graduation” is not constructed by systems primarily as a way to get families out of services.
<b>4.3. Follow-up with the family</b> GOAL: To ensure that the family is continuing to experience success post-wraparound and to provide support if necessary	<b>4.3 a. Check in with family</b> Facilitator leads team in creating a procedure for checking in with the youth and family periodically after commencement. If new needs have emerged that require a formal response, facilitator and/or other team members may aid the family in accessing appropriate services, possibly including a reconvening of the wraparound team.	The check-in procedure can be done impersonally (e.g. through questionnaires) or through contact initiated at agreed-upon intervals either by the youth or family, or by another team member.

*Appendix 2: Site Characteristics and Admission Criteria for Each of the Three Sites*

West Palm Beach, FL	<p>Family HOPE serves children and families who reside in District 9, School Board Area 3 in Palm Beach County, Florida, the central urban core of West Palm Beach. School Board Area 3 is roughly comprised of nine zip codes, two of which have significantly higher service utilization rates than surrounding neighborhoods in that central part of the county. This catchment area rests within the fifteenth largest school district in the country, serving approximately 140,000 students, 41 percent of whom received free or reduced school lunches in 1997. The county is demographically diverse, with 35 percent of the population being African-American or Hispanic, and with a continually growing Haitian population. According to project staff, more than 86 different languages are spoken in the area.</p>	<p>The target population served by the grant program are children and their families who have a serious emotional disturbance as determined by the State ADM Program Office or by the school board. Enrollment is based on family needs and desire for highly intensive, community-based wraparound services as well as the following initial diagnostic criteria:</p> <ul style="list-style-type: none"> <li>&lt; DSM–IV or ICD 9 Axis I or II mental health diagnosis</li> <li>&lt; Significant family stress as defined on Axis IV</li> <li>&lt; Significant level of functional impairment in one or more life domains in Axis V</li> <li>&lt; Diagnostic features anticipated for a year or more in duration</li> <li>&lt; GAF scores under 60 at admission</li> </ul> <p>In addition to the diagnostic criteria listed above, enrollment priority is given to children and families who:</p> <ul style="list-style-type: none"> <li>&lt; have involvement in multiple child-serving systems of care,</li> <li>&lt; receive services or care out of the home, or are at risk of out-of-home placement,</li> <li>&lt; have a significant history of crisis stabilization,</li> <li>&lt; have been unsuccessful in previous service delivery, and</li> <li>&lt; live in the high-volume zip code areas and are members of a minority community.</li> </ul>
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Marion County, IN	<p>The catchment area for the Dawn Project is all of Marion County, which is comprised of the city of Indianapolis. It does not include the total expanded Indianapolis metropolitan area, which extends into eight other counties. The population of Marion County is approximately 815,000, including 217,000 children under age 18. Demographically, 79 percent of the population is Caucasian, 19 percent African-American, and 2 percent Hispanic. However, according to respondents, Dawn's service population is over 60 percent African-American or biracial and less than 40 percent Caucasian.</p>	<p>The target population for the Dawn Project is children between the ages of 5 and 17 who are residents of Marion County and who meet the criteria for serious emotional disturbance.</p> <p>Eligibility criteria for Dawn include the following:</p> <ul style="list-style-type: none"> <li>&lt; Aged 5–17 years</li> <li>&lt; Resident of Marion County</li> <li>&lt; Presence of a serious emotional disorder diagnosable under <i>DSM-IV</i></li> <li>&lt; Involvement with two or more child-serving consortium agencies</li> </ul> <p>Or, children may meet the profile of one of the “expansion” groups:</p> <ul style="list-style-type: none"> <li>&lt; Former Dawn enrollee returning home from a secure correctional facility</li> <li>&lt; Resident of State hospital and requiring assistance to transition back into the community</li> <li>&lt; Youth at risk for out-of-home placement who could benefit from early intervention</li> </ul>
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<p>Wilmar, MN</p>	<p>Located in west central Minnesota 100 miles west of Minneapolis-St. Paul, and extending to the South Dakota border, the 4 counties participating in the PACT 4 Wraparound Initiative cover 3,150 square miles and have a combined population of 92,522. The Upper Sioux Indian Reservation is located within the service area and participates as one of PACT 4's collaborative members. Per the 2000 U.S. Census, the population within PACT 4's catchment area is culturally diverse with 4,853 Latinos, 492 Native Americans, and 302 Asians. Not specifically listed in the census figures are an estimated 400 members of the Somali and Ethiopian communities. A very small number of African American and Asian American children adopted by white families also live in the catchment area, according to PACT 4 program statistics. Based on 1990 census figures and SAMHSA's 10 percent prevalence estimate, it was determined at the time of the grant proposal that approximately 2,731 children in the PACT 4 service area were suffering from serious emotional disturbance. Other notable statistics at that time was a 14 to 21 percent poverty rate for children in the 4 counties and a marked increase in juvenile crime and violence. The rate of juvenile petitions filed in the PACT 4 service area grew from an annual 216 cases in 1990 to 903 cases in 1997. In 1999, approximately 250 children were receiving case management services through the county. Also in 1999, on the Upper Sioux Indian Reservation, an Indian Child Welfare Act (ICWA) worker served 52 children with serious emotional disturbance, out of a total Upper Sioux Community population of 400. Furthermore, schools in the PACT 4 area provided services to 369 students who had emotional, and behavioral disturbance.</p>	<p>PACT 4 served 462 children during the past year, of whom 77 percent were Caucasian, 12 percent were either Latino, African American, Native American, or Asian, and the remaining 11 percent were listed as having "unknown" race and ethnicity. Sixty-three (63) percent of the total number of children served were male. The target population for PACT 4 includes children aged birth to 21 who have a DSM-IV diagnosis and who meet one of the State of Minnesota guidelines for serious emotional disturbance, as outlined in the Minnesota Comprehensive Children's Mental Health Act, as follows:</p> <ul style="list-style-type: none"> <li>&lt; The child has been admitted in the last 3 years, or is at risk of being admitted to inpatient treatment or residential treatment for an emotional disturbance.</li> <li>&lt; The child is receiving treatment for an emotional disorder through the interstate compact.</li> <li>&lt; The child has one of the following, as determined by a mental health professional: psychosis or clinical depression; or risk of harming self or others; or symptoms as a result of being a victim of physical abuse, sexual abuse, or psychic trauma within the past year.</li> <li>&lt; The child, as determined by a mental health professional, has significantly impaired home, school, or community functioning that has lasted 1 year or is at risk of lasting 1 year.</li> </ul> <p>The final eligibility factor is that children must have service needs that involve 2 or more agencies and function at a moderate-to-severe impairment level as determined through a formal assessment process, such as the Child and Adolescent Functional Assessment Scale (CAFAS).</p>
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